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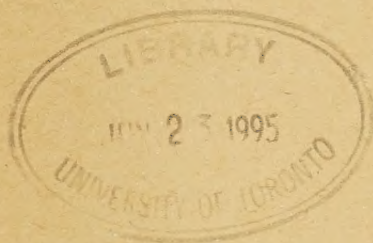
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NATURAL RESOURCES CANADA

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VOL. 4

JULY, 1925

No. 7

CANADA IS ONE OF WORLD'S LEADING POWER PRODUCERS

SECOND IN TURBINE HORSE- POWER INSTALLED

Computations Also Place Dominion First in Per
Capita Consumption of Electrical Energy

The World Power Conference held in England last year brought together a great deal of information regarding progress in water-power development in the various countries participating in the Conference. Unfortunately a common basis for the estimation of available resources has not yet been adopted, so that it is difficult to list these resources in a simple tabular statement; in some countries the resources are estimated upon an 8-hour or 12-hour day, with regulation of flow by storage reservoirs, others base their estimates upon the flow continuously available for various periods such as six or more months of the year. This being the case, it is difficult to place a figure upon the resources of the various countries which will be strictly comparable in all cases.

The same difficulty in a minor degree exists in regard to developed resources, some give the turbine installation, others the actual annual output which can be produced at the developed sites. However, it has been possible to arrive at figures for a number of the principal water-power countries which will represent with reasonable correctness the power developed upon the basis used in Canada, namely, turbine installation.

The following table lists nine of the leading countries in water-power development, with their population, installed turbine horse-power, and installation per thousand population.

DEVELOPED WATER-POWER OF LEADING
COUNTRIES, 1924

	Populat'n in 1000's	Turbine h.p. installed	
		H.p. in 1000's	Per M of pop'n.
Canada.....	9,227	3,570	387
France.....	40,000	2,500	63
Germany.....	60,000	1,100	18
Italy.....	39,000	2,300	59
Japan.....	60,000	1,750	29
Norway.....	2,700	2,000	740
Sweden.....	6,000	1,600	266
Switzerland.....	4,000	1,750	437
United States.....	112,826	11,000	97

It is interesting to note that Canada stands second in turbine horse-power installed and third in installations per thousand population. In the latter category it follows Norway, where

(Continued on page 2)

TREE PLANTING ON PRAIRIE FARMS

Twenty-Fifth Annual Distribution of Seedlings By Forestry Branch Brings Total To 82,500,000

This spring the Tree Planting Division of the Forestry Branch of the Department of the Interior completed its twenty-fifth annual distribution of trees to farmers in the Prairie Provinces. In these years the division has sent out for farm shelter-belt planting

ment is the attitude which teachers and educational authorities, particularly in Saskatchewan, are beginning to take towards it. Many school grounds have been planted with the assistance of the Forestry Branch. In Saskatchewan 202 schools were this spring supplied with



Tree Planting on Prairie Farms—The benefit of tree plantations about the homes of prairie settlers is shown in the above picture of a farm in western Manitoba. Seventeen years before this picture was taken this home was surrounded by bare prairie.

a total of over 81,000,000 seedlings and cuttings of broadleaf trees and nearly 1,500,000 young spruce and pine transplants. Approximately forty thousand shelter-belts have been established since this distribution began. Several thousand carefully prepared planting reports each year furnish the Forestry Branch with accurate information as to the success of these plantations, and these reports indicate that fully 80 per cent of them are in a thriving condition.

The stock is grown at two forest nursery stations, the one at Indian Head, Sask., supplying the southern portions of the three Prairie Provinces, and the other at Sutherland, Sask., providing material for the northern parts. The shipping season this year extended from April 14 to May 1 and during that period 2,470,000 seedlings, cuttings, and transplants were sent out from Indian Head to 3,080 farmers, and 2,500,000 seedlings and cuttings were distributed from Sutherland to 3,010 farmers. Most of this stock is used for planting shelter-belts about farm buildings and gardens, but there is an increasing demand for material for field shelter-belts for crop protection and control of soil-drifting.

An interesting and important development of the tree-planting move-

155,000 seedlings and cuttings, and a smaller number were similarly assisted in Manitoba and Alberta. This object lesson in the betterment of home life by the improvement of surroundings is viewed as very important by western educationists.

The system of distribution is co-operative, the farmer providing the land and the labour and paying the express charges, while the Government supplies the plant material and expert advice. In the early days of western settlement it was generally believed that trees could not be made to grow on the prairie, but as a result of this movement that misconception has been dissipated, and there is now a heavy demand for planting material. The Forestry Branch receives each year about two thousand new applications—that is applications from farmers who have not previously taken up tree planting—for co-operative assistance in establishing shelter-belts. The three provinces are divided into eight inspection districts, in each of which an inspector is constantly on the move giving the necessary advice and supervision during the laying out and establishment of new plantations, and the total number of farmers' names on the in-

(Continued on page 2)

SEA LIFE ABOUNDS AMID CANADIAN ARCTIC ISLANDS

SEAL THE MAINSTAY OF THE ESKIMO

Observations of Departmental Officer During
Extended Stay on Baffin Island

Knowledge concerning Canada's Arctic regions increases each year, and it is of value to learn from competent observers that the picture of life there that rises to the mind's eye of outsiders is usually too sombre. Life, it is true, is strenuous but the natural resources of the land and the sea provide a living in return for hard work. The natives of the Far North are the wards of the nation and, in its efforts to protect the Eskimo from any adverse effects of advancing civilization, such as the depletion of wild life, the Department of the Interior through its North West Territories and Yukon Branch, sends out officers from time to time to investigate and report on conditions. One of these officers, Major L. T. Burwash, exploratory engineer, spent fifteen months among the Eskimo of Baffin island and the following account of sea life in the Arctic is taken from one of his reports.

Arctic waters do not differ greatly from those of more southern latitudes, as the low temperatures affect little more than the surface and there is an abundance of life in most of the forms in which it appears in more promising surroundings.

The sea mammals are the mainstay of the country. Without the various types of seal, the white whale, narwhal and walrus, even the Eskimo could not hope to exist. At many points along the coast line these animals are found in sufficient numbers to guarantee a living for the native, whilst in a number of areas they exist far in excess of present day needs.

Of these the seal is by far the most important. From it the native secures a large part of his meat supply, summer clothing, boots, kayak and topek covers, dog harness, cordage and numerous other requirements, not the least of which is oil for fuel. Types of seal found are the jar (*Phoca hispida*), square flipper (*Erignathus barbatus*), harp (*Phoca groenlandica*), grey or freshwater (*Halichoerus grypus*), and hood (*Cistophora cristata*). The jar seal is found in much greater numbers than the other types. This is fortunate because it supplies choicer meat, better

(Continued on page 3)

CLOSE AN IMPORTANT SURVEY IN ROCKIES

Triangulation of Alberta-British Columbia Boundary Completed—Great Scenic Beauty of Area Traversed

The secondary triangulation in connection with the survey of the boundary between the provinces of Alberta and British Columbia, from the Yellowhead pass northward to the intersection of the 120th meridian with the continental divide, was completed during the 1924 field season by engineers of the Geodetic Survey of Canada, Department of the Interior. By 1921 the survey of the interprovincial boundary had been completed northward from the 49th parallel to Yellowhead pass by the British Columbia-Alberta Boundary Commission, and the task of the Geodetic Survey was to carry triangulation from that point northward along the summit of the Rockies for about one hundred miles to the point where it intersected the line of the 120th meridian which was being run by a boundary survey party, southward from the 60th parallel. The object of the triangulation was to supply control for the detail surveys and delimitation of the boundary.

Initial operations were begun in 1922 and were in charge of Mr. H. F. J. Lambart, D.L.S., of the Geodetic Survey, who made a reconnaissance for a triangulation net covering the area in the vicinity of the line. In 1923 a geodetic base-line was laid down in Yellowhead pass, and near the close of that season the reconnaissance party succeeded in sighting a cairn erected on Torrens mountain by the boundary party working southward on the 120th meridian. It immediately became apparent that the intersection of the meridian with the continental divide was thirty miles southeast of where for years it has been supposed to be. In 1924 three observing parties concluded the angular measurements of the triangulation through what is a veritable sea of mountains.

The country traversed during the course of the survey is one of the most magnificent stretches of the Rocky mountains. The highest peaks in the whole system as well as some of the largest of the ice-fields are situated in this section, one of the most extensive of the latter, that of the Mount Chown-Mount Bess area, covering over one hundred square miles. The Sheep Creek pass, near which the intersection of the meridian with the continental divide occurs, is a valley of exceptional beauty. Some six miles in length and at most one and one-half miles wide, it consists of a series of gently sloping terraces, flanked by a heavy growth of spruce and jack pine, the latter reaching an unusual size. Alpine flowers grow in abundance, but garden vegetables did not prosper in the small experimental plots set out by the engineers. Numerous sulphur springs were also noted on Sheep creek a few miles east of the divide.

Throughout the district game is quite plentiful. Deer, caribou, mountain goat, bighorn sheep, and an occasional grizzly may be seen in the valleys and on the hillsides.

In the carrying out of this triangulation work aeroplanes were of great assistance to the engineers, a preliminary reconnaissance of the whole area having



Golfing in the Canadian Rockies—Scene on the golf course in Jasper National park. The pines and the snow-capped mountains form an incomparable background.

JASPER PARK GOLF LINKS A REAL TEST

Attractions of Excellent Course Enhanced by Beauty of Alpine Setting

All over the world the importance of outdoor recreational resources is now recognized. The rapid pace of modern life demands physical exercise away from the crowd and dust of cities. Canada is rich in these resources and they are being increasingly made use of, both by her own citizens and by those who come from abroad. The Canadian Rockies have many attractions—motoring, riding, climbing, swimming in the mountain lakes, and, not least, golfing in the crisp upland air, for several of the Canadian National parks have been provided with facilities for enjoying this popular game.

The golfer likes variety. He asks a good course, with a touch of severity and still not too arduous, and the introduction of something unusual. Golfers visiting Jasper National park this year will find a course of nine holes which combines all these things. The natural terrain of the Jasper links is one of its features. The gravelly subsoil, so essential to the production of good golfing turf, has made the introduction of clay unnecessary. An abundance of sand assures substantial and numerous bunkers.

The course as designed shows sportiness, for the most part supplied by natural hazards, but this is not carried so far as to be tiresome. The longer holes are constructed with a view to assisting, rather than retarding, the usual game. For the more ambitious there is plenty of scope for a display of the highest golfing skill, while a short course is available for the less enthusiastic.

In addition to the many unique features of the playing field, the unusual is generously displayed in the grandeur of the scenic setting. Towering, snow-clad mountains fringe the links, while the beautifully clear, opalescent Lac Beauvert, besides offering opportunities for the skilful introduction of water

been effected, with the co-operation of the Royal Canadian Air Force. Transportation, which was difficult, was effected entirely by pack-horse, and mountain climbing was characteristic of the task of the engineers engaged in the instrumental work.

hazards, frames a setting for some of the holes that is perhaps unparalleled among American courses.

The total length of the course compares favourably with some of the premier courses of America. Nine holes are ready for play this season and the course will be raised to the standard size of eighteen holes for the 1926 season.

CANADA IS ONE OF WORLD'S LEADING POWER PRODUCERS

(Continued from page 1)

a great deal of power is developed for electro-chemical industries, and Switzerland, in which country the population is concentrated in a small area where water-power is plentifully available and economic conditions have stimulated its use.

While Canada takes third place in turbine horse-power installed per capita, it is believed that in actual consumption of electrical energy the Canadian consumption of over 1000 kilowatt hours per capita in 1924 stands first. A compilation of the output of over one hundred of the largest power systems in North America (including both water-generated and fuel-generated power) includes nine Canadian systems, all of them water-power, and shows the Hydro-Electric Power Commission of Ontario to have the largest output of any power system in North America. The Canadian systems, in addition to the first place, also occupy the fourth and tenth places in order of magnitude of output. This fine showing is entirely due to water-power development, and is all the more remarkable when it is realized that our population is only a little more than 8 per cent of that of our great neighbour to the south.

TREE PLANTING ON PRAIRIE FARMS

(Continued from page 1)

spection lists in these districts now amounts to 10,200. While, considered by themselves, these numbers are large yet they are small in comparison with the extent of the settled prairie country, indicating that much remains to be done.

The growth of the tree-planting movement has been steady (excepting for the dislocation caused by the war) and this has been due to the realization that not only do tree plantations on the prairies increase the productivity of the farms but that they also add to the comfort and enrich the social and aesthetic side of the life of the farmer and his family.

INCREASING CANADA'S AGRICULTURAL OUTPUT*

Dominion Experimental Farms Engaged In Solving Problems of Production—Immense Losses To Crops

Canada's prosperity depends largely on agriculture, and in turn the Dominion's agricultural prosperity depends on her ability to satisfy local markets and to produce a large surplus of superior quality for export. In the past thirty years great developments have taken place in agriculture in Canada. Vast areas of new land have been settled, exports have risen tremendously, and living conditions in rural communities have much improved. Yet in all these points Canada is still in her infancy, so that the room for further expansion is enormous. At the same time the rate of this advance will be determined under present world-wide economic difficulties by the progress made in solving our problems of production.

There never was a time when careful investigation and experimentation in these problems offered such excellent returns. In spite of Canada's great and increasing output in all lines, production costs of nearly every field, orchard, garden, and animal product are higher than they should be, due to heavy and often controllable losses. At the present time Canada is suffering annual losses to field crops from plant diseases alone that reach staggering totals. For example grain smuts cause a yearly loss of upwards of \$12,000,000, and grain rusts take an annual toll of from \$5,000,000 to \$50,000,000. Insufficient knowledge of moisture control or cultural methods, or lack of suitable types and varieties of crops cause low production in many areas. Again, many areas in newer Canada are importing, often from other countries, at high purchase and transportation costs, the larger part of the fruits and vegetables consumed, and much unnecessary outlay is due entirely to lack of varieties suitable to local climatic conditions. Even the older parts of Canada import tremendous quantities of fresh and prepared foodstuffs, totalling in value millions of dollars annually, which commodities might well be grown in Canada.

All these problems furnish subjects for investigation by the Dominion Experimental Farms of the Department of Agriculture. Thirty-three stations and substations are operated at selected points throughout the Dominion. Agricultural experimentation and investigation constitute the purpose and almost the entire work of these government-operated institutions. In other words these stations are seeking to solve the problems of determining better methods, providing superior materials and varieties, etc., in order to assist in controlling wastes and losses and to increase the quantity, quality, and saleability of Canada's agricultural products.

*Prepared under the direction of Dr. J. H. Grisdale, Deputy Minister of Agriculture, by Mr. E. S. Archibald, Director, Dominion Experimental Farms.

Exports of paper and paper products from Canada during the fiscal year 1924-25 were valued at \$99,941,910 as against \$96,957,962 in the previous twelve months. Newsprint exports accounted for nearly 92 per cent of this total.

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OTTAWA, JULY, 1925

HISTORIC SITES BOARD HOLDS ANNUAL MEETING

Thirty-Eight Sites Are Recommended for
Marking As Being of National Importance

The fourth annual meeting of the Historic Sites and Monuments Board of Canada was held recently in Ottawa when over one hundred and fifty sites were reviewed and thirty-eight of these selected to be suitably marked as being of national importance. Brig-Gen. E. A. Cruikshank, chairman, presided at the meeting and the other members in attendance were, Dr. J. H. Coyne representing Ontario; Dr. J. C. Webster representing the Maritime Provinces; His Honour Judge F. W. Howay representing Western Canada; Mr. A. Fauteux representing Quebec; Mr. J. B. Harkin, Commissioner of Canadian National Parks, representing the Department of the Interior; and Mr. A. A. Pinard, Canadian National Parks, secretary. The Historic Sites and Monuments Board of Canada acts in an advisory capacity to the Department of the Interior in connection with the work of marking the historic sites of the Dominion.

Of the sites selected by the Board at the 1925 session, the most important include the following: Champlain's Landing, Allumette island, opposite Pembroke, Ont.; site of the first railway in Canada, St. John's to Laprairie, at Laprairie, Que.; the Témiscouata Portage route, at Cabana, Que.; Fugitive Slave Refuge, at Amherstburg, Ont.; inception of the construction of the Rideau canal at Ottawa, Ont.; Fort Qu'Appelle, Sask.; Fort de la Reine, one of de la Verendrye's original posts, at Portage la Prairie, Man.; Fort Steele, B.C., famous as a North West Mounted Police post.

Approximately twenty sites are marked each year by the Dominion Government, and among the most important dealt with in 1924 were the following: Legislative Building, Charlottetown, P.E.I.; Fort Edward, Champlain's habitation at Granville, and the First Royal Dockyard, at Halifax, N.S.; Fort Crevier, Fort Charlesbourg Royal, and Odelltown, Que.; Fort Nottawasaga, near Collingwood, First Welland Ship canal, and Fort de Lévis, Ont.; Fort Douglas, Man.; Batoche, and



Sea Life in Canada's Arctic Archipelago—Eskimo topek or skin hut at Ponds Inlet, Baffin Island, made of sealskins. The native is also dressed in sealskin garments. The C.G.S. "Arctic" may be seen anchored off shore.

SEA LIFE ABOUNDS AMID CANADIAN ARCTIC ISLANDS

(Continued from page 1)

light skins for clothing and better oil for fuel than do the others. The square flipper is generally associated with the herds of jar seal and is a very necessary factor in native life, for it supplies cordage and heavy leather for boots and kayaks. The harp seal is fairly plentiful in the more southerly waters and, if need be, could replace the square flipper in supplying Eskimo needs. As the fresh-water seal is scarce it is considered somewhat of a luxury, supplying as it does, a skin much sought after for ornate clothing. The hood is also somewhat rare. It is used for the same purposes as the square flipper.

Where seals are plentiful the Eskimo is not greatly concerned about walrus, white whale or narwhal. Owing to their great size, however, the latter animals can be made to supply large quantities of meat for winter use while the skins of the white whale and the narwhal are considered a delicacy and often form the "pièce de resistance" in Eskimo hospitality. Years ago the walrus was a necessity on account of the ivory secured from its tusks from which were made many of the native hunting implements and other tools. The coming of the white trader, however, with his supply of iron and steel tools has made the walrus, in a sense, less necessary to Eskimo existence. Nevertheless it cannot be questioned that the sea mammals are the backbone of Eskimo life.

Mussels, clams, shrimps and sea crabs are all found in Arctic waters. With the exception of the crab they are all somewhat under-developed, due perhaps to the darkness of the long Arctic night when they are more or less dormant. They are found in large quantities and form an important part of the food of the sea mammals and are used largely by the natives. The crabs when full grown measure as much as 11 inches over all.

Fish are not so abundant. It is true that a variety of salmon or Arctic trout is taken during the summer season in sufficient quantities to supply the seasonal needs of the natives and that cod is known to frequent at least one area in the waters around Baffin Island, but the seas as a whole cannot be looked upon as fishing grounds of more than very local importance.

Cut Knife Hill, Sask.; Frog Lake Massacre, and Fort Calgary, Alberta; and Fort Yale, Prospect Point, and Fort Langley, B.C.

Plant life is found in profusion and a complete description of it is beyond the bounds of a short article such as this. It may be said, however, that it supplies part of the food of all the sea mammals and water-fowl and that forms of kelp or dulse are used by the Eskimo to vary their diet.

BEGIN MOVEMENT OF BUFFALO NORTHWARD

Surplus Animals in National Park at
Wainwright Go To Wood
Buffalo Reserve

The success of Canada's experiment in conservation of buffalo is shown by the steady increase in the herd in the Buffalo park at Wainwright. In 1909 the herd numbered 709, over two thousand have since been slaughtered for commercial purposes, and this spring there were about eight thousand in the park. The herd has now reached a point where there is a substantial surplus over and above the average forage capacity of the park. That surplus this year is to be disposed of by sending the animals to the Wood Buffalo park near Fort Smith, on the borders of Alberta and the Northwest Territories. The first weekly shipments have begun and will continue at the rate of two hundred animals per week until a total of about two thousand animals has been transported. The buffalo are loaded on railway cars at Wainwright and shipped to Waterways, Alberta. Here they are transferred to scows, which are towed down the Athabaska and Slave rivers to the Wood Buffalo park, where the herd will be under the care of the North West Territories and Yukon Branch. The Wood Buffalo park or reserve is an unfenced area of ten thousand five hundred square miles, in which a herd of wild wood buffalo has ranged and thriven for many years.

The experiment is one of great moment, both as regards the conservation of buffalo and as to economic and food conditions in the north country.

YUKON FISH PRODUCTION

The value of the fishery production of the Yukon Territory in 1924, as reported by the Dominion Bureau of Statistics, was \$18,773, an increase of \$6,857 over the preceding year. Salmon, whitefish, and trout, were the principal contributors, accounting for over 97 per cent of the total.

CANADA'S ASBESTOS COMES FROM QUEBEC*

In Point of Value One of Dominion's
Important Non-Metallic
Mineral Products

From small beginnings about 1880 Canada's asbestos industry has grown steadily until at the present time, exclusive of fuels and structural materials, it is in point of value the most important of her non-metallic mineral products. The value of the shipments of asbestos of all grades in Canada in 1924 amounted to nearly six and three-quarter millions of dollars.

Canadian asbestos, which is the serpentine, or chrysotile variety, all comes from the Eastern Townships, in Quebec, the principal mines being in the townships of Broughton, Thetford, Ireland, and Coleraine. Quite recently a little asbestos has been produced from development work on a deposit in Deloro township, close to the Porcupine gold-fields of northern Ontario.

The asbestos is marketed as hand-cobbed, long-fibre crude, and milled fibre. The proportion of crude fibre to milled asbestos that can be produced from the Canadian mineral is small, but the crude is by far the more valuable product. Most of the output is exported in the unmanufactured condition, chiefly to the United States, but there are now several plants for the manufacture of asbestos goods in Canada and there will probably be a gradual diminution in the proportion of the output for manufacture abroad.

The long fibre is spun into thread or yarn that can be woven or braided into cloth, rope, tape, and other forms and used for fire-resisting and heat-insulation purposes generally. The shorter grades of fibre are used for the manufacture of fireproof mill-board, building paper, roofing felt, and shingles; and for pipe-covering compounds, cements, and paints.

From its earliest days up to a few years ago the growth of the Canadian asbestos industry had been remarkably steady and at a normal, healthy rate. But, between 1917 and 1920, prices advanced so rapidly that Crude No. 1 sold as high as \$3,000 per short ton. In 1920, the output of all grades reached 200,000 short tons valued at nearly \$15,000,000. A slump in prices in 1921 caused production to fall off more than 100,000 short tons in quantity and nearly \$10,000,000 in value. In 1923, 231,482 short tons of all grades were produced but the value was only a little over half that of the 1920 output; in 1924 the production was some 225,744 short tons valued at \$6,710,830. The average price of Crude No. 1 is now about \$412 per ton, or twice its pre-war value.

The sharp decline in prices, aggravated by price cutting, and severe competition from South Africa in the most profitable market, that for long-fibre spinning grades, has caused serious dislocation in the Canadian asbestos industry. At the present time a merger of the most important operating companies is being negotiated, in order that the Canadian operators may be better able to successfully meet increasing foreign competition.

*Prepared under the direction of Dr. Charles Cammell, Deputy Minister of Mines, by Mr. A. H. A. Robinson, Mines Branch, Ottawa.

ISSUE NEW MAPS OF OUR ALPINE REGIONS

Donald and Banff Sheets of Sectional Map of Canada Contain Most Valuable Data

Twenty-three revised sheets of the Sectional Map of Canada have now been issued by the Topographical Survey, Department of the Interior, covering generally speaking, the more populous parts of Western Canada between Winnipeg and the Rocky mountains. The Donald and Banff sheets (Nos. 163 and 164) recently issued are prepared on the same basis as all of the rest of the series but are of special interest to tourists, alpinists, hunters, fishermen, and naturalists because they cover a large portion of the very finest scenery in the Rocky and Selkirk mountains. The topographical information is very complete. To the basic topography of mountain and stream have been added the improvements of man, such as the built-up portions of towns and cities, motor camps, golf links, etc. Four classes of roads are shown and also the pack-trails and bridle-paths. The alpinist will find the maps of great value because of the accurate location and altitude of all the peaks and contours, indicating the best climbing routes. The ice-fields and glaciers are prominently shown, and also the wooded areas.

Calgary is shown at the southeast corner of the Banff sheet and Mount Revelstoke National park at the southwest corner of the Donald sheet, which adjoins the Banff sheet to the west. The entire areas covered by Yoho and Glacier National parks are shown and the northerly portions of the Rocky Mountains and Kootenay National parks. Within a few months it is expected that the Calgary sheet (No. 114), will be issued, covering the country south of the Banff sheet, including the remainder of these parks. In the meantime a map of the Rocky Mountains National park on nearly the same scale provides the best information obtainable.

The Calgary-Banff-Windermere road, now of international importance as part of the 4,000-mile Grand Circle tour of Canadian and United States National parks, is of course prominently shown in a broad, red line. The three other classes of roads may be readily picked out, and what is of perhaps greater importance is the great number of pony or pack-horse trails shown.

These maps cover the best known and most attractive scenery in the Rocky and Selkirk mountains, including the finest of Canada's alpine regions, altogether over 6,000 square miles of mountains. Among the very well known tourist haunts covered are Banff, Lake Louise, Moraine lake and valley of the Ten Peaks, Paradise valley, lake O'Hara, Yoho valley, Takakkaw and Twin falls, the great Wapta ice-field and glacier, and Emerald lake, all in the Rocky mountains; and the most easily reached glacier on the continent, the great Illecillewaet, the Asulkan valley, mount Sir Donald, and Albert canyon in the Selkirk mountains.

The scale is one inch to three miles. Each sheet is printed in eight colours and covers an area of about 4,300 square miles. For public demand these are supplied at the nominal price of 25 cents for each copy on thick or thin paper, or in a pocket folder for 50 cents.

DEVELOPING CANADIAN HIGHWAYS*

Great Strides Made in Increasing Dominion's Good Roads —Mileage in the Different Provinces

Under the Canada Highways Act, the federal legislation intended to encourage the building of highways, agreements have been entered into for the construction of approximately 8,000 miles of good roads in the different provinces, and at the close of the working season of 1924 nearly 6,000 miles had been completed. By the terms of the

and Quebec cost from \$25,000 to \$75,000 per mile.

All of the provinces, except Alberta which was the last province to enter upon this highway work, have now under agreement enough highway construction to take up the whole of their allotments under the Act. There remain in the aggregate in the different



Developing Canadian Highways—Fine stretch of road near Kentville, Nova Scotia. Note the broad, smooth highway and the picturesque surroundings.

above-mentioned Act there was appropriated from the Consolidated Revenue Fund of Canada the sum of \$20,000,000 to encourage the building of highways, this amount being divided among the provinces in proportion to population. The aid has gone towards the making of the best highways possible with local materials, upon main trunk arteries. Of the cost of approved projects, under this plan, the Dominion Government has paid 40 per cent and the province concerned 60 per cent. The total length of the road systems to which this contribution has applied is 25,000 miles. The mileage in each province, completed with federal aid, is as follows:—

Province	Miles
Alberta.....	177.00
British Columbia.....	263.71
Manitoba.....	958.20
New Brunswick.....	350.00
Nova Scotia.....	474.78
Ontario.....	564.88
Prince Edward Island....	670.50
Quebec.....	954.66
Saskatchewan.....	1,551.20
Total.....	5,964.93

In the above table it will be noted that some of the more populous provinces have a smaller mileage than less populous provinces. This is due to the fact that roads which are satisfactory for the light traffic of, say, Prince Edward Island can be built for \$3,000 or \$5,000 per mile, whereas roads to carry the heavy traffic in parts of Ontario

*Prepared under the direction of Mr. A. W. Campbell Chief Commissioner, Canada Highways Commission.

C. G. S. "ARCTIC" SAILS ON NORTHERN PATROL

Annual Visit Will be Made To Posts in Canadian Arctic Archipelago

The preparations, which have been under way for some time in the North West Territories and Yukon Branch of the Department of the Interior, for the annual patrol of the Canadian Arctic archipelago were completed on July 1, and on that date the C.G.S. *Arctic* sailed from Quebec carrying the usual relief personnel, and laden with supplies for the northern posts. As in previous years it is expected the *Arctic* will return to Quebec about the end of September.

The expedition is in charge of Mr. George P. Mackenzie with Captain J. E. Bernier as chief navigating officer. Dr. L. D. Livingstone is ship's surgeon; Dr. L. J. Weeks, of the Geological Survey, Department of Mines, geologist; Captain Harwood Steele, secretary; Messrs. R. M. Foster and R. S. Finnie, wireless operators, and Mr. George H. Valiquette, cinematographer. Others in the party are Inspector C. E. Wilcox, of the Royal Canadian Mounted Police, who is returning after spending the winter in civilization, and several members of the force.

It is planned to make the usual call at each of the existing posts in the Canadian Arctic, to establish a new post, and to perform the usual patrol and investigatory work.

as great. The increase in 1924 over 1923 was 75,152. On the other hand there was the motor traffic from the United States. Looking merely at the total number of tourists' motor cars entering Canada there is a decrease from 1,936,600 in 1923 to 1,898,859 in 1924, but this decrease is entirely in the number of cars entering Canada for twenty-four hours. The number of cars brought into Canada for one to six months rose from 1,956 to 2,344, and those brought in for two to thirty days increased from 272,444 to 361,630. It will thus be seen that the aggregate number of days spent by tourists in the country was increased greatly in 1924. This resulted in a growth in the estimated revenue from tourists from \$118,000,000 in 1923 to \$143,000,000 in 1924. Great as this sum is the direct and indirect benefits to Canada from increased transportation facilities for its own citizens and in the way of improved international relations are even greater.

AUTOMOBILES ENTERING CANADA IN 1923 AND 1924 FOR PERIODS INDICATED

Province	For 1 to 6 mos.		For 2 to 30 days	
	1923	1924	1923	1924
Alberta.....	13	2	970	1,575
Br. Columbia.....	9	63	55,438	73,345
Manitoba.....	21	25	4,645	3,502
New Brunswick.....	73	124	4,092	6,605
Nova Scotia.....	93	104	288	409
Ontario.....	1,505	1,645	120,742	163,876
P. E. Island.....	7	12	Nil	Nil
Quebec.....	228	352	85,530	110,582
Saskatchewan.....	7	17	739	1,736
Total.....	1,956	2,344	272,444	361,630

Manganese has never been mined to any large extent in Canada, but during 1924 shipments amounting to 584 tons valued at \$4,088 were made from the province of New Brunswick to the province of Quebec.

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HEAVIEST TOURIST TRAVEL TO PARKS IN THEIR HISTORY

OUR SCENIC PLAYGROUNDS ATTRACT THOUSANDS

Mid-Season Figures Show Large Increases in Visitors by Motor and Rail

Never before in their history have the Canadian National Parks in the Rocky mountains had such an influx of visitors, both by rail and by automobile, as this present season. The world is now "on wheels" and the foresight of the Parks' authorities in opening up motor roads through the parks to connect with the great lines of motor travel, both in Canada and from the United States, has resulted in an immense increase in the number of automobile touring parties entering the parks. Last year the number was twice that of 1923 and this year, from the returns already in, it is certain that the 1924 figures will be greatly exceeded. What this means will be seen when it is stated that last season there passed, both ways, through Kananaskis Gate, the eastern entrance to Rocky Mountains park, 15,448 cars carrying 61,222 passengers. Large as these figures are, they will be much exceeded this year since they have been practically equalled by the totals to the end of July, 1925. The figures for the western entrance and for the Banff-Windermere highway show a proportionate advance. The various motor camps in the different parks are recording a greater number of parties than ever before. At Mount Rundle camp, in Rocky Mountains park, the number of camping parties up to 21st July was 1,950 as compared with 1,280 for the same period in 1924. On one day this year there were 458 parties totalling 2,061 persons under canvas in this camp.

The number of visitors arriving by rail shows a gratifying growth, and this, combined with the increase of visitors by motor car, is reflected in the increased demand upon hotel space and in the greater use of park facilities. At Jasper park, where the hotel accommodation was recently doubled, the Lodge has been taxed to capacity many times this season.

The year 1924 was the record one for the number of bathers at the Upper Hot Springs and the Cave and Basin in Rocky Mountains park but at the middle of July this year the number had gone over 20,000 which was several thousand in advance of the same period

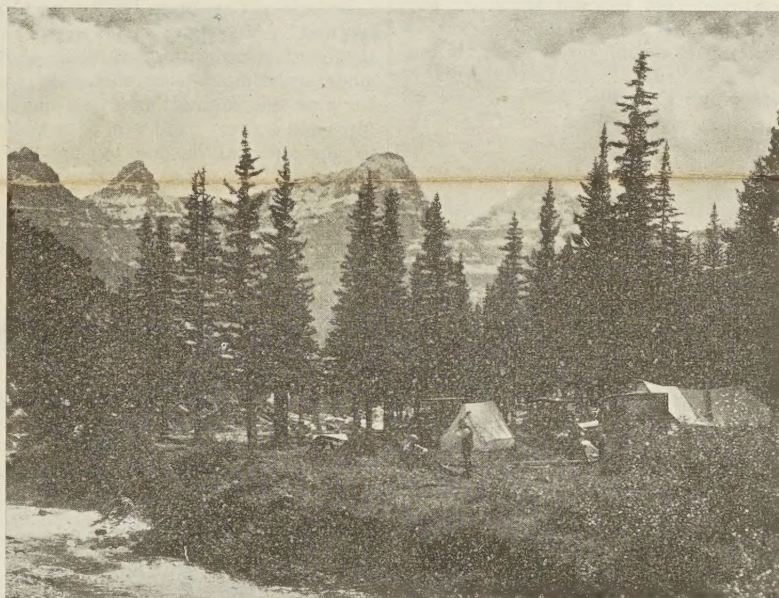
(Continued on page 2)

OUR NATIONAL PARKS AT WEMBLEY

Canada's Tourist Attractions Are Featured at British Empire Exhibition—Display Awakens Keen Interest

Speaking in Ottawa, recently, Mr. J. F. Lister, Chairman of the British Empire Service League, stated that one of the noticeable results of the Canadian Exhibition at Wembley had been the awakening of a keen interest in the scenic and recreational attractions of

the principal fishing, big game, and wild life regions, culminating in the National parks in the Rockies. Some idea of the size of the piece may be gained from the fact that the main canvas forming the backdrop is 250 feet long in one piece with an area of 10,000



Our National Parks at Wembley—A motor camp on the shores of Moraine lake in Rocky Mountains National Park. Camps situated at convenient points in the different parks aid in fulfilling the purpose for which these playgrounds were set aside, namely for the benefit and enjoyment of all Canadians.

this country. As a result, he said, many people from Great Britain and the continent were planning to visit Canada in the near future.

In the past Canada's agricultural and industrial opportunities have been stressed and have bulked most largely in the public mind. At Wembley, however, both last year and this, Canada's scenery and climate, her big game and her National parks have been featured. One of the most attractive exhibits in the Canadian pavilion last year was a large composite model of the parks, depicting the snowclad mountains, glacial streams, and beautiful waterfalls characteristic of the district.

The scenic exhibit this year takes the form of a giant panorama covering practically the entire length of the northern wall of the main corridor and picturing typical scenery of Canada from coast to coast. The model shows the main water and rail routes, with miniature steamships and trains in motion,

square feet. Two thousand powerful lamps illuminate the panorama and the lighting is so manipulated that the country is seen in turn at sunrise, noon, day, and sunset. The exhibit attracts throngs of visitors from early morning till night and the officials often have difficulty in keeping the crowds from blocking traffic. An official of the Canadian National Parks Branch of the Department of the Interior has been at Wembley during both exhibitions, distributing specially prepared literature, giving lectures, and answering inquiries from interested sources.

The extent and magnificence of Canada's scenic and big game areas have been a revelation to people of the Mother Country, and the fact that a new playground was open to them within the limits of the Empire, where a holiday could be enjoyed in more comfort and in not a great deal more time than is required by a trip to the Shet-

(Continued on page 4)

PULP AND PAPER PRODUCTION IN CANADA IN 1924

OUTPUT SLIGHTLY LOWER THAN IN 1923

Decrease in Pulp Exports Responsible— Manufacture and Export of Paper Substantially Increased

The total production of the Pulp and Paper Industry in Canada in the calendar year 1924 showed a slight falling off in value compared with 1923, but an increase compared with any year since the peak was reached in 1920. The figures are: 1924, \$187,174,703; 1923, \$188,642,109; 1922, \$158,483,377; 1921, \$154,641,077. This is according to the preliminary report of the industry recently completed by the Forest Products Branch of the Dominion Bureau of Statistics, and is on the basis that the net value of production for the entire industry is to be considered as the sum of the values of pulpwood exported, pulp exported, and paper manufactured. The slight falling off in value in 1924 is due to a decrease in the exportation of pulp. The manufacture and exportation of paper both show substantial increases. In the case of pulpwood the quantity exported in 1924 decreased by 3.9 per cent whereas the value increased less than a tenth of one per cent.

There were 115 mills in operation in Canada in 1924 as compared to 110 in 1923. Of these mills, 46 manufactured pulp only, 34 were combined pulp and paper mills, and 35 manufactured paper only. The 80 mills manufacturing pulp produced 2,465,011 tons of this commodity valued at \$90,323,972 as compared to 2,475,904 tons valued at \$99,073,203 in 1923. The 69 mills producing paper in 1924 turned out 1,718,741 tons of paper, which with certain miscellaneous pulp products were valued at \$133,395,673 as compared to 1,589,303 tons valued at \$128,089,609 in 1923.

Newsprint made up 80.8 per cent of the paper manufactured in 1924, amounting to 1,388,081 tons valued at \$100,276,903 as compared to 1,251,541 tons valued at \$93,213,340 in 1923. The production of newsprint in the United States during approximately the same period was reported as 1,471,000 tons. Allowing for differences in classification and differences in the periods covered by individual reports this indicates that Canada's production of newsprint has approached to within a hundred thousand tons of that of the United States.

The apparent total production of

(Continued on page 3)

WILL MAKE PATROL ALONG ARCTIC COAST

Department of the Interior Sends Official
North for Two Years Investigation

Canada exercises jurisdiction in her Arctic archipelago and is endeavouring to ameliorate the conditions under which her Eskimo citizens are living. Patrols sent out by the Dominion Government are administering justice and investigating conditions in that vast area. Every precaution is being taken to conserve the wild life of Arctic Canada and the operations of the white trapper and trader are being so limited as to avoid undue depletion of the furbearers and game animals.

In pursuance of this policy Major L. T. Burwash, exploratory engineer of the North West Territories and Yukon Branch, Department of the Interior, has already begun his patrol through the southern islands of our Arctic archipelago from the mouth of the Mackenzie river to Hudson bay. He will travel through this country for the next two years, living with the natives and investigating conditions on the ground.

Major Burwash left Ottawa on 2nd July en route for Fort Smith, Northwest Territories, and from there proceeded by steamer to the mouth of the Mackenzie river. From Aklavik he will travel eastward along the coast, visiting the different settlements and making surveys, observations, and other investigations. Major Burwash hopes to winter on King William island where there is a considerable band of Eskimo, and next year will continue his journey, and expects to come out either at Repulse bay at the north end of Hudson bay or else to cross country to Wager bay and Chesterfield inlet.

During his trip Major Burwash, in addition to conducting scientific and economic investigations, including a survey of the wild life and other natural resources of the land and sea along the Arctic coast, will take a census of the Eskimos in the district traversed. Observations for magnetic declination will be made by Major Burwash for the Topographical Survey, and much other valuable information is expected to result from the trip.

Major Burwash will travel alone and will secure what assistance he requires by engaging natives from each of the different tribes he visits. It is believed that it will be much easier for one man to pass through the country than if the investigation were made by a party of considerable size.

The total estimated honey production for Canada in 1924 was 15,804,000 pounds with a value of \$2,552,000.

The value of products of the fruit and vegetable packing and allied industries in Canada for the calendar year 1923 reached a total of \$20,901,322. By products, the values were: fruits, canned, \$1,732,118; vegetables, canned, \$7,175,419; fruits, evaporated, \$236,371; fruits, preserved, \$5,558,043; vinegar, pickles, etc., \$4,061,749; other products, \$2,107,622.

The 1,004 concerns in Canada engaged in the manufacture of iron and steel and their products in 1924 had a combined production valued at \$368,476,650, according to a preliminary statement of the Dominion Bureau of Statistics. The industry represents a total capital investment of \$535,539,833.

ECONOMY BY WOOD PRESERVATION

Forest Products Laboratories Engaged in Combating
Losses Due to Decay of Timbers

In Canada, the growing realization that the heavy drain on the nation's forests must be lessened is evidenced in the widespread interest taken in the work of the Department of the Interior in combating the losses caused by fire and insects, and also in assisting citizens in securing a closer utilization and lengthened life of the product. This latter part of the work is carried on by the Forest Products Laboratories, of the Forestry Branch, which have for some years past been paying a great deal of attention to problems connected with the preservation of wood by treatment with various substances. This treatment consists in forcing into the wood certain chemicals which are poisonous to the low forms of plant life which cause decay in wood.

The importance of the work may be gauged by the fact that the yearly monetary loss in Canada due to decay of timber used for railway ties, poles, bridges, culverts, etc., is estimated to be not less than thirty-five million dollars. The greater part of this loss is preventable, and the extension of the practice of preserving wood by the treatment just referred to would save much of this large amount of money. As an instance of such saving, it may be stated that of the thirteen million ties which Canadian railways now use annually, eight million could be saved if the wood were treated. This is the equivalent of 264,000,000 feet board measure of lumber.

Timber has usually been regarded as a short-lived material of construction; when treated, however, it is much changed in this regard. Highway bridges, for example, constructed of timber treated with creosote may be confidently expected to last for twenty-five years (apart from the wearing surface), with a strong probability that they will last half as long again. Hence these may be regarded as permanent structures. In addition, the maintenance charges of such bridges are very low; no painting, for example is necessary. They have the advantage that they may be more readily widened, strengthened for heavier traffic or taken down and re-erected elsewhere, than other types of construction.

Decay of timber is due to certain of the lower forms of plant life called fungi, and the growth of these is greatly favoured by heat and moisture. Hence a moist climate such as that of the Maritime Provinces or British Columbia (especially if characterized by periods of warm weather) is more conducive to the decay of wood than the colder and drier climates of northern Ontario and northern Quebec. Consequently, in climates of the latter type, it will be necessary to use the best protection from mechanical wear that can be secured at a reasonable expense and to adjust the preservative treatment to protect the tie from decay for the period of its mechanical life.

An experimental treating plant has been established at the laboratories and already considerable research work has been done at the instance of the Canadian railways and other large consumers of wood. There are, it may be noted, ten wood-treating plants in operation in Canada, equipped to treat ties and structural timber, and three more are under construction. In response to many

inquiries as to the suitability of Canadian woods for treatment, the laboratories have selected twenty Canadian woods and are now investigating the relative suitability of these woods for treatment. Among other problems that are engaging attention are the seasoning of hardwood ties for creosote treatment, the value of certain proprietary wood preservatives, and the use of crude oil in mixture with preservatives for the treatment of railway ties.

HEAVIEST TOURIST TRAVEL TO PARKS IN THEIR HISTORY

(Continued from page 1)

in 1924. The largest single day this season saw 1,078 bathers at the different pools, which was nearly fifty per cent more than the record day of last year.

Similarly the eighteen-hole golf course at Banff has been in almost constant use while the new course at Jasper, opened by Field Marshall Earl Haig on his recent visit, is well patronized and is receiving unstinted praise.

This state of affairs is encouraging from every standpoint. It shows that thousands of Canadians by "seeing Canada first" are keeping money circulating at home; it indicates that other thousands are coming from abroad to visit our great playgrounds and view our unsurpassed scenery, and are thus adding to our national income by the "purchase" of the only exportable commodity which never diminishes; and, above all, it is a barometer which indicates the approach of better times for Canada and for the world.

BIRD HAD CROSSED ATLANTIC

Interesting Fact Disclosed by the Band on a
Kittiwake Shot in Newfoundland

The Canadian National Parks Branch, which keeps a record of all wild bird banding operations of interest to Canada, has had brought to its attention an account of a bird locally called a "ticklace," which was killed on 12th August, 1924, by Mr. L. Curtis, of Horse Island, in the District of St. Barbe, Newfoundland. On the bird was found a thin silver band inscribed with the words: "Inform Witherby High Holborn, London."

On writing to Messrs. H. F. & G. Witherby, 326 High Holborn, London W.C.1, England, it was learned that this ring, No. 67423, was put on a young kittiwake (*Rissa tridactyla*), on 28th June, 1923, on the Farne islands, Northumberland, England, by one of Mr. Witherby's correspondents. The foot of the bird was examined and was pronounced to be that of a kittiwake, which agrees with Mr. Witherby's records. The record is extremely interesting, more especially as this bird is the first under Mr. Witherby's ringing scheme—which has been in operation for 16 years—reported from this side of the Atlantic.

The value of the crop taken from the hop fields of British Columbia during the year 1924 is estimated to be \$317,159, the yield being 813,228 pounds. Five hundred and seven acres of land were under crop.

TREATY PROVIDES FOR BOUNDARY ADJUSTMENTS

Agreement Between Canada and United
States Will Simplify Commission's
Work

Slight adjustments in the International Boundary between Canada and the United States which will remove certain anomalies and otherwise simplify the work of the International Boundary Commission, are provided for in a treaty signed at Washington on 24th February, 1925. All matters concerning the boundary between the Dominion and the United States are handled by a joint commission composed of one commissioner from each country, Mr. J. D. Craig, Director General of Surveys, Department of the Interior, being His Britannic Majesty's Commissioner.

Maps of the vicinity of the northwesternmost point of the lake of the Woods, based on notes of the surveys of 1872, showed that this meridian boundary intersected in five places the boundary passing through the lakes, and the treaty recently signed provides for the moving of the boundary point known as the "northwesternmost point" of the lake of the Woods 4,785 feet due south, and thereby transferring to Canada two small water areas of about two and a half acres in extent which were formerly part of the United States, but which were entirely surrounded by Canadian waters, a somewhat anomalous situation. The treaty also stipulates that the boundary south of the provinces of Manitoba, Saskatchewan, and Alberta, shall consist of a series of straight lines joining adjacent boundary monuments, instead of the present series of curved lines which are difficult of determination. The straight lines never deviate from the curved ones more than a few inches, and the total area involved is only about 25 acres, along a boundary of 853 miles in length. In this case the United States is the gainer. A small zone of water in Grand Manan channel between the provinces of New Brunswick and the state of Maine and formerly of controvertible jurisdiction, has been divided between the two countries by extending the boundary 2,383 metres from its former terminus, to the high seas. The treaty also provides for the permanent maintenance of the boundary line in a state of effective demarcation, by repair and renewal of boundary monuments and the re-opening of boundary vistas.

The adjustment of the boundary in the Lake of the Woods region is a matter of considerable satisfaction. The earliest reference to the point is contained in the description of the boundaries of the United States in the treaty of Paris of 1783. By the treaty of Ghent, 1814, commissioners were appointed to decide upon the boundary through the Great Lakes as far west as the northwesternmost point of the lake of the Woods. In 1818 the 49th parallel of latitude was decided on as the boundary from the lake of the Woods to the Rocky mountains; in 1824 the latitude and longitude of the northwesternmost point in the lake of the Woods was determined, and in 1872 a line was run south connecting this point and the 49th parallel.

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Natural Resources, Canada, is published in French as well as in English, and readers may have whichever edition they prefer.

OTTAWA, AUGUST, 1925

CONTROL SURVEYING ON NORTHERN PLAINS

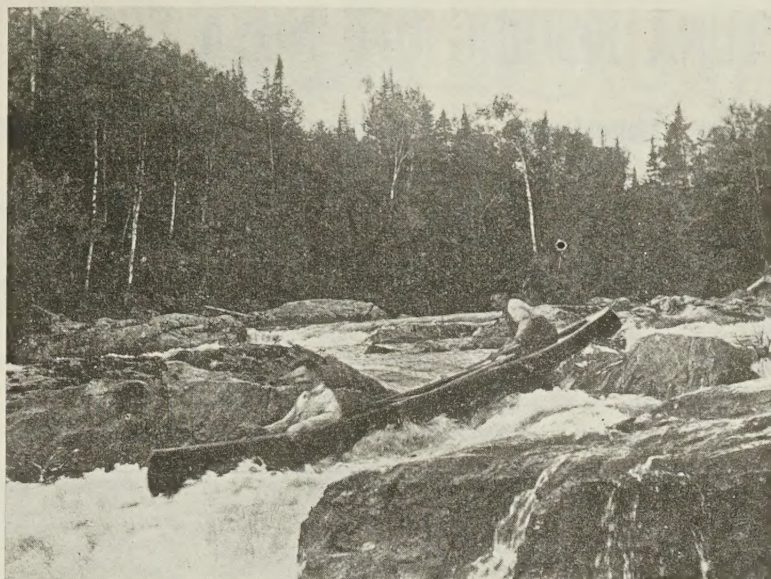
Topographical Survey of Wollaston Lake Entailed Long and Arduous Canoe Trips

During the 1924 season an interesting feature of the work of the Topographical Survey, Department of the Interior, was the control survey of Wollaston lake in northern Saskatchewan. This large body of water covering about one thousand square miles is unique in that its waters empty into two oceans: through the Mackenzie River system into the Arctic ocean, and by way of the Churchill river and Hudson bay into the Atlantic. The carrying out of the survey in that district resulted in the issuing of a very complete set of maps.



Control Surveying on Northern Plains—Surveyors transporting supplies across Frog portage, from Sturgeon-weir river to Churchill river on the way to Reindeer and Wollaston lakes in northern Manitoba and Saskatchewan.

The laying down of the control work in the Wollaston Lake area took the surveyors over canoe routes of 1,800 miles and involved 107 portages. Starting from the railway at The Pas, Manitoba, two parties travelled by steamer to Cumberland House, a distance of 80 miles up the Saskatchewan river. Here the canoes were loaded with about seven tons of camp outfit, instruments, and supplies, and the journey continued on up Cumberland and Namew lakes, the Sturgeon-weir river, and over the Frog portage to the Churchill. The Churchill river was then followed down to the Reindeer and the journey con-



A Popular Canoe Trip in New Brunswick—Running the rapids below Indian Falls in the Nipisiguit river.

tinued up the latter to Reindeer lake where the two parties separated, that headed by Mr. C. S. Macdonald, D.L.S., surveying Reindeer lake, the Swan River route to Wollaston lake, part of Wollaston lake, and the Cochrane river. This survey took the party over a route of 1,100 miles and 61 portages. Mr. B. H. Segre, D.L.S., led the other party across the Swan River route to Wollaston lake, surveying the remaining part of it, the Fond-du-lac river, and lake Athabaska to Fond-du-lac trading post, completing a journey of 700 miles in which there were 46 portages.

The fact that these parties were able in four months to cover such great distances in the course of their work in making extensive surveys, clearly indicates that the Reindeer and Wollaston Lake areas are accessible, and that the system of connecting waterways offers greater opportunities for rapid travel than had previously been supposed. Three weeks travel from The Pas, Manitoba, brings the traveller to Brochet, at the north end of Reindeer lake, and here the traveller has reached the southwesterly edge of the fall, winter, and spring feeding grounds of the northern caribou (*Rangifer arcticus*), where these animals roam in herds of 75 to 100 and form one of the principal resources of the country. Moose are abundant in this district and fur-bearing animals such as red, cross, silver, and black fox, mink, marten, beaver, grey, and black timber wolves, wolverine, bear, and Arctic hare are fairly plentiful. The lakes and rivers abound in fish, large trout up to 45 pounds being taken in Reindeer and Wollaston lakes. Sturgeon, the largest fresh water fish, have been caught in the Churchill river.

The country is also rich in scenic beauty. Lying in the great Laurentian Plateau, Reindeer lake, which is about 140 miles long and 30 miles wide, contains myriads of rocky and wooded islands, and the water is very clear and cold and upwards of 60 feet deep. Wollaston lake which is very similar in character, except that it has fewer islands, is about 70 miles long and 25 miles wide. Churchill river consists of numerous lake-like expansions connected by narrow stretches of river with rapids and waterfalls. The river contains numerous rocky islands while its shores are indented with inlets and bays reaching back for miles. On the Reindeer, Cochrane, and Fond-du-lac rivers, rapids and waterfalls are very numerous.

The country is generally wooded with a fair growth of small spruce, birch, and Banksian pine with scattered tamarack and poplar. Agricultural land is scarce but where there are good patches of land vegetables may be successfully grown.

PULP AND PAPER PRODUCTION IN CANADA IN 1924

(Continued from page 1)

pulpwood was 4,647,201 cords valued at \$57,777,640 as compared to 4,654,663 cords valued at \$57,119,596 in 1923. Of this total in 1924 3,316,951 cords valued at \$44,241,582 were manufactured into pulp in Canada while the remaining 1,330,250 cords valued at \$13,536,058 were exported to the United States. Domestic consumption increased by 1.4 per cent in quantity and exportation decreased by 3.9 per cent.

The exports of paper and paper goods during the calendar year 1924 amounted in value to \$99,248,497 as compared with \$93,770,957 in the previous year. These exports were made up chiefly of newsprint paper of which 1,219,385 tons valued at \$90,990,711 were exported, mostly to the United States. This represents an increase both in quantity and in value over 1923 when 1,137,962 tons were shipped out of Canada with a value of \$85,611,258.

The exports of wood pulp amounted to 781,983 tons valued at \$40,242,972 as compared to 875,353 tons valued at \$47,027,496 in 1923.

The value of production by provinces is summarized as follows:—

	Pulpwood	Pulp	Paper
Canada	\$57,777,640	\$90,323,972	\$133,395,673
N.S.	884,252	830,633
N.B.	4,371,547	6,867,619
Que.	27,432,814	44,090,213	62,523,583
Ont.	21,805,745	31,622,586	59,904,883
Man.	22,071
B.C.	3,261,211	6,912,921	10,967,207

* Included with Quebec.

SHEEP ON MANITOULIN ISLAND

Sheep raising has, for many years, been an important branch of farming on Manitoulin island, Ontario. Besides the good outlet for lambs to tourist camps during the summer months, large numbers of lambs have been marketed in the fall in Toronto and other centres. Owing to a dry season a few years ago, the sheep population of the island fell away to some extent, but it is steadily building up and with better stock than was previously raised.

A POPULAR CANOE TRIP ACROSS NEW BRUNSWICK

Scenery and "White Water" Invite Seasoned
Canoeists to Tobique-Nipisiguit Route

"Up the Tobique and down the Nipisiguit," the picturesque canoe route across northern New Brunswick, is year by year becoming more popular. For the seasoned canoeist a better trip could scarcely be imagined, through nearly 150 miles of virgin wilderness and hardly a mile without "white water." The country traversed is picturesque in the extreme, the general contour being rugged and mountainous, with peaks rising to heights of 2,000 to 2,500 feet and the whole clothed with a heavy growth of virgin forest.

The Tobique and Nipisiguit are both noted salmon rivers and while many of the pools are leased, permission to fish them may be obtained by arrangement with the lessees. Trout up to four and five pounds are plentiful in both rivers, as well as in Nictor and Nipisiguit lakes. The district is conceded to be one of the very finest big game countries east of the Rockies, and unexcelled opportunities are offered under the game regulations for hunting moose, deer, and bear, while the abundance of wild life and the beauty of the scenery make the region a paradise for the camera hunter.

Plaster Rock, the starting point, is on the Canadian National railway and is also reached by a branch of the Canadian Pacific railway, 187 miles northwest of St. John, and is easy of access from Boston and the New England States, either by rail or by steamer to St. John. All necessary equipment and supplies and also guides, if desired, may be obtained at Plaster Rock. Bathurst, where the trip ends, is on the Canadian National railway, 63 miles east of Campbellton and 367 miles east of Quebec.

Entering the Tobique river at Plaster Rock, the route leads upstream past the small isolated settlements of Mapleview, Everett, and Riley Brook to Nictau, or, to use the local name, The Forks, where three rivers enter the Tobique: the Campbell, and Mamozekel from the east and the Sisson from the west. Nictau is the last settlement on entering the wilderness from the west. Twenty-seven miles above Nictau, or sixty-two miles from Plaster Rock, Nictor lake, the headwaters of the Tobique, is reached. This lake is three miles long and from its eastern end a portage of three miles over the Micmac trail leads across the height of land to Nipisiguit lake, the headwaters of the Nipisiguit river. The route now follows this latter river through a winding course, much broken by falls and rapids. Twenty-five miles below Nipisiguit lake is Indian falls and 22 miles farther on, The Narrows, with a drop by rapids and falls totalling 30 feet. Five miles below The Narrows comes Grand falls where the river tumbles precipitately in four descents through a huge, rocky gorge. Including the rapids below, the total fall is 120 feet. Chain-of-Rocks rapids, four miles below Grand falls, has a descent of 35 feet in half a mile, and Middle Landing rapids, three miles farther on, has a fall of 30 feet also in half a mile. Four miles below this the river drops 25 feet over the picturesque Pabineau falls, and in another eight miles the canoeist reaches Bathurst on beautiful Chaleur bay.

NEW MOTOR ROAD OVER THE CENTRAL ROCKIES

Lake Louise-Field Highway Will Be Ready
For Use Next Spring

One more of the supremely beautiful regions in the Central Rockies will soon be made accessible to the motorist. Engineers of the Canadian National Parks Branch of the Department of the Interior are now engaged on the construction of the last section of what will be known as the Lake Louise-Field highway, a road which will open Yoho National park for the first time to motorists from the outside world. The work is being prosecuted with as much expedition as possible and operations are sufficiently far advanced to ensure the opening of the road next spring.

From Hector station to Field the highway makes use of the old right of way of the Canadian Pacific railway abandoned when the spiral tunnel through Cathedral mountain was built. In former days the descent of the west slope was regarded as one of the most thrilling and impressive in the whole mountains. Mountain lovers, realizing this, often left the train at Hector of late years and walked down the seven or eight miles to Field, so as to absorb the full grandeur of the splendid panorama, with its distant views of the Kickinghorse and Yoho valleys and the great ice world along the Divide.

The new road is a continuation of the Lake Louise road which branches off from the famous Banff-Windermere highway at Castle. Leaving Lake Louise it follows the Bow valley to near the Divide and then crossing the Kickinghorse pass (5,329 ft.) it drops down by good grades to Field. From this point roads already lead to many of the chief beauty spots of Yoho park and the Yoho valley, Takakkaw falls, Emerald lake by way of Snowpeak avenue, and the Natural bridge will all be within motorists' reach.

CANADA IS LARGEST PRODUCER OF COBALT*

Dominion's Output Comes From Ontario
Mines—Its Importance in
Manufacturing

Canada holds the record as the world's largest producer of cobalt, all of which comes from mines in the province of Ontario.

It was not until 1903 that the big find was made at what is now the town of Cobalt, Ontario, during the construction of the Temiskaming and Northern Ontario railway, although a small tonnage of cobalt was reported from the nickel-copper ores of Sudbury for the years 1892 to 1894 inclusive. To date about \$14,000,000 worth of cobalt and its compounds have been produced. This yield has been obtained almost entirely from the silver-cobalt-nickel ores of the Cobalt area.

In 1924 the estimated Canadian production of cobalt products in the form of metal, oxide, salts, and residues was equivalent to 960,266 pounds of contained metal, for which the producers received \$1,678,124.

In the same year 170,513 pounds of metallic cobalt, valued at \$382,225, was

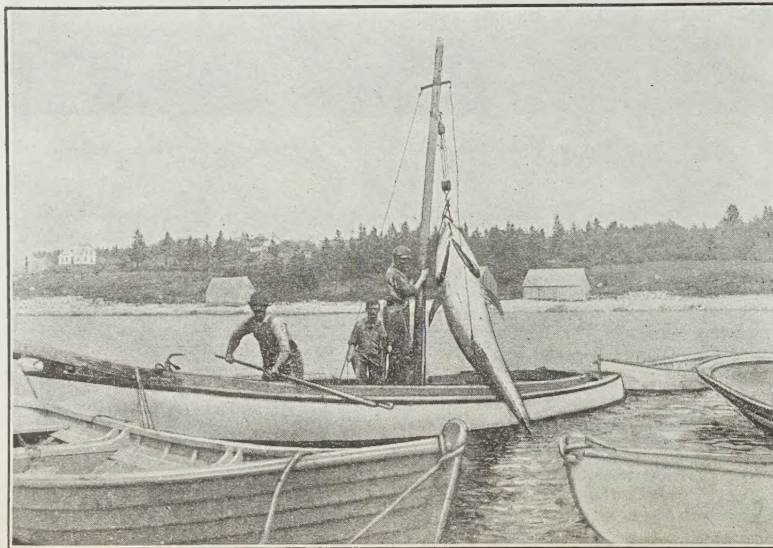
*Prepared under the direction of Dr. Charles Camsell, Deputy Minister, Department of Mines, Canada.

TUNA FISHING OFF NOVA SCOTIA

Growing Importance of Commercial Fishery—Excellent
Opportunities For Sport

Tuna fishing in the coastal waters of Nova Scotia is growing in importance both as a commercial fishery and as a means of attracting expert anglers to spend their vacation on our Atlantic coast. According to a report made to the Department of Marine and Fisheries tuna fishing for commercial purposes had its inception in 1919 when the

tangled in nets and gear and caused considerable damage. However a market for tuna was opened in the United States, where it is in high favour among the residents of Italian and Portuguese extraction, and considerable shipments were made from the Clark's Harbour and Port La Tour districts of Shelburne county, and from



Tuna Fishing Off Nova Scotia—Picture showing a monster tuna caught by a fisherman on the Canadian Atlantic seaboard.

first serious effort to establish this fishery was made at Hubbards, Lunenburg county. The 1923 catch totalled 331,000 pounds valued at \$9,659, and in 1924, owing to an error on the part of shippers who confused tuna with albacore or horse-mackerel which brought it within a dutiable class in the United States tariff, the production dropped to 169,400 pounds with a value of \$5,140. However representations made have resulted in the fish being properly classified as tuna and this is expected to result in an increased catch this year.

The tuna fish, which is closely related to the mackerel and for some time was locally mistaken for albacore or horse-mackerel, has been very plentiful along the coast of Nova Scotia. It was for years looked upon as a nuisance by in-shore fishermen, as it became

exported; also 2,421 pounds of cobalt alloys, valued at \$11,930, and 490,505 pounds of cobalt oxides and salts, valued at \$908,122, making a total value of \$1,302,277.

Some cobalt colours are imported for use in the ceramic industry, but the statistics are not segregated.

The price of cobalt metal was firm throughout the year at \$2.43 to \$2.67 per pound. The black oxide remained steady at \$2.19 and the grey oxide at \$2.43.

Cobalt metal is used in the manufacture of stellite, which is a cobalt-chromium-tungsten alloy used extensively for making cutting tools. It is also employed in making certain kinds of tool steels and in the manufacture of magnet steels.

Cobalt oxide and numerous cobalt salts made from the oxide find wide application in the ceramic and enamel industries and in the production of various pigments. Cobalt salts are also used in electro-plating.

the Hubbards district of Lunenburg county. The prices range from three to nine cents per pound, and in 1919, the first year in which special efforts were made to build up a lucrative tuna fishery, nearly 600,000 pounds were taken at Hubbards.

The fish are caught in trap nets, and a "spiller" net is used to draw the fish within killing distance, after which they are dispatched and then landed. The head and tail fins are removed from each fish, and it is packed whole in individual boxes and shipped. These fish vary in size from 450 pounds to 1,300 pounds and their value as a food fish compares favourably with any of the large fish. The steak portions are, in appearance, not unlike a good quality of beef, while other parts closely resemble veal and are greatly relished by epicures.

In addition to the commercial fishery, Nova Scotia also offers excellent opportunities for sport fishing for tuna. Each year finds an increasing number of sportsmen, both from Canada and the United States, fishing for these great prizes in the coastal waters of the province, and catches running from 600 to 750 pounds have rewarded their efforts with rod and line. Zane Grey, the noted author, holds the record to date for the largest catch, landing a 758-pound tuna after a battle that lasted three and a half hours. During the trip in which he secured his record catch, Mr. Grey's party also accounted for two smaller tuna weighing 736 and 684 pounds respectively. The smaller of these battled six hours before it was landed. The thrills of "playing" these immense fish are manifold and as the fame of tuna fishing off the Nova Scotia coast spreads, increasing throngs of tourists and anglers will be attracted to our Atlantic seaboard.

CO-ORDINATE LEVELLING UNDER CENTRAL BUREAU

Department of the Interior Amalgamates
Staffs Carrying Out Control Operations

In conformity with the general policy of consolidating organizations performing similar or allied operations, the Department of the Interior has amalgamated in one division, under the Geodetic Survey of Canada, the staffs which in the past have been carrying out control levelling. All precise and secondary levelling will in future be carried out by this division and all levelling publications will emanate from it. With the object of rendering increased public service it is the intention to establish in this division a central collecting bureau for levelling data of all classes. Arrangements have been made with the Department of National Defence and the Department of Mines whereby records of levelling resulting from their mapping activities will be filed with this division. Eventually, by co-operation with provincial governments, railways and other organizations performing levelling, it is proposed to have on record in this bureau all available levelling information that has been carried out in the Dominion. This data will be tabulated, correlated, and placed on mean sea level datum, and will be readily accessible to the public.

As a result of this consolidation engineers and surveyors upon making a single request to the Director of the Geodetic Survey, Ottawa, will be furnished with the correlated records of available levels in any specified area in Canada.

OUR NATIONAL PARKS AT WEMBLEY

(Continued from page 1)

lands from the south of England, has undoubtedly made a strong appeal. Many visitors from Australia and New Zealand have also come to realize that they could avoid a long sea voyage by using the All-Red route either to or from the Pacific and at the same time, by whichever line they chose to travel, see some of the great national parks and the outstanding scenery of Canada.

An item published in the English newspapers recently stated that from the number of inquiries that were being received railway and steamship agents estimated that 10,000 visitors would come to Canada this year. This would seem to indicate that a new stream of tourist travel had been diverted to Canadian shores. The beneficial results of the extension of the tourist industry are now too well recognized to need comment. It is an axiom that "trade follows the tourist" and the saying would be equally true, that settlement follows the tourist. The bookings indicate that these visitors are many of them from New Zealand, Australia, and the other Dominions, in addition to people from the British Isles. Their visits to Canada must tend to bring about increased mutual knowledge and sympathy between people from different parts of the Empire, as well as an appreciation of Canada's rich possibilities as a place for investment and settlement. There are, too, more immediate benefits which cannot be overlooked. If these 10,000 visitors spend on an average of \$500 each while here, the whole will mean an addition of \$5,000,000 to the national income of Canada, a very satisfactory return in one year from the efforts spent to attract them.

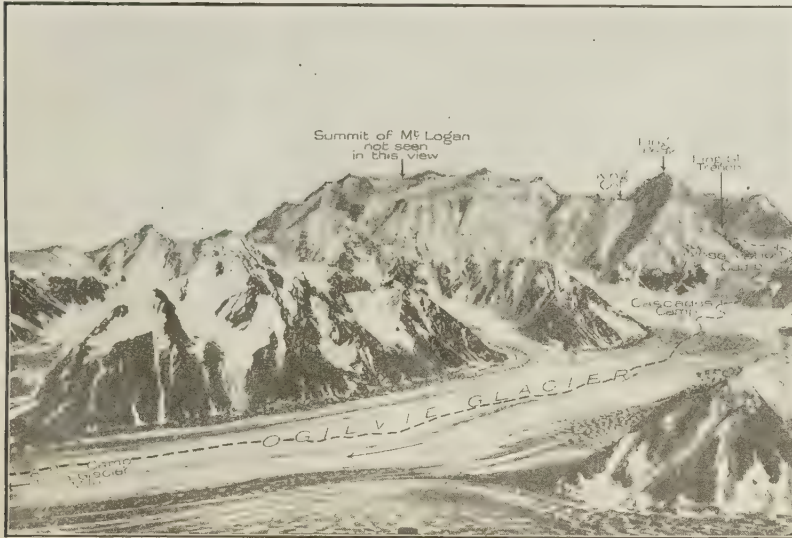
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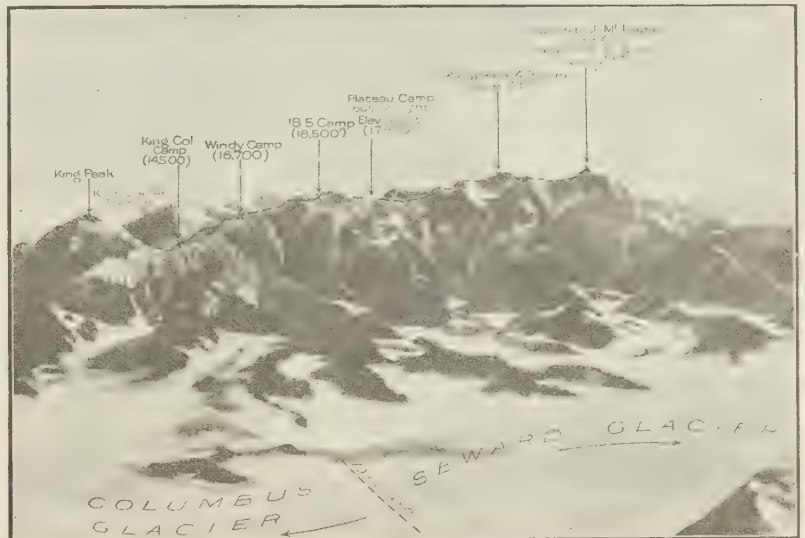
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Mt. Logan from the northwest showing the route up Ogilvie glacier. From Advance Base Cache camp all supplies had to be transported by the members of the party, and the actual climb up the mountain began at Cascades camp.



The south face of Mt. Logan as seen from Mt. St. Elias. The dotted line indicates approximately the route of the party during the most strenuous part of the climb and the successive camps are indicated by the arrows.

CANADIAN ALPINISTS' BRILLIANT CONQUEST OF MOUNT LOGAN

In the scaling of Mt. Logan a new and brilliant chapter has been written in the history of Canadian mountain climbing and exploration. The honour of the achievement belongs to the Canadian Alpine Club, assisted by the Department of the Interior, which contributed the services of the vice-leader and the accumulated information of many years survey work on and near the Alaska-Yukon boundary.

Where is Mt. Logan and what is there about it that should cause the eyes of the people, not only of Canada and the continent of America but of the world, to be turned toward it?

Mt. Logan is in the Yukon, 21 miles east of the International Boundary and about the same distance northeast of Mt. St. Elias. It is named after Sir William Logan, the founder, and for many years the Director, of the Geological Survey of Canada. Mt. Logan, with its elevation of 19,850 feet, is the highest peak in Canada and second highest in North America, ranking next to Mt. McKinley, in Alaska, which rises to a height of 20,310 feet. It is one of the greatest (if not the greatest) of mountain masses in the world. If it were cut off at the 10,000-foot contour line the top would be a plateau containing 100 square miles. On top of this imaginary plateau is a complete system of domes, valleys, and glaciers, containing a number of peaks ranging from 19,000 to 19,850 feet in height. Moreover Mt. Logan is the centre of the greatest known glacial expanse outside of Greenland and the Antarctic continent. On the south is the Seward glacier, which ends in the great Malaspina glacier on the coast, itself covering 1,500 square miles and with a discharging face of 60

Expedition Added Greatly to Store of Geographical and Meteorological Knowledge

miles in extent; on the west is the Columbus; and on the north, the Chitina, the Walsh, and the Logan, with their innumerable tributaries, such as the Ogilvie, which was ascended in making the climb.

The story of the discovery and conquest of Mt. Logan is in every way a romantic one. For a hundred years and more explorers and travellers went up and down the coast and even proceeded some distance inland without suspecting that the mighty bulk of Mt. St. Elias (18,008 feet) and its fellows hid still higher peaks, and it was not until 1890 that Mr. J. C. Russell, of the United States Geological Survey, in an attempt to climb Mt. St. Elias discovered the greater mountain beyond. Ever since that time it has been the ambition and duty of alpinists to endeavour to climb Mt. Logan, both for the adventure and for the addition to the store of geographical knowledge that was to be made thereby.

There is among explorers a fine spirit of chivalry, which, when a task seems to appertain to a particular individual or nation, restrains others from entering upon the adventure until the first individual or nation has either achieved success or decided not to attempt it. It was in this spirit that Professor A. P. Coleman of Toronto University, the veteran geologist and mountain climber, in 1922 presented the case to the Alpine Club of Canada at their annual camp in British Columbia. He pointed out that

if Canadians did not attempt the ascent of Mt. Logan it would be the privilege and opportunity of alpinists from abroad to do so. The Club took up the challenge. Without going into details, it may be stated that the club selected one of their members, Mr. Albert H. MacCarthy, of Wilmer, British Columbia, an experienced and enthusiastic mountain climber, to be the leader, and they requested the Department of the Interior to allow Mr. H. F. Lambart, of the Geodetic Survey, another member of the club who has had much experience in mountain climbing in connection with his work on the Alaska-Yukon boundary survey, to become vice-leader. On that survey Mr. Lambart made one of the record climbs, Mt. Natazhat, 13,500 feet, and last year he climbed with others Mt. Robson the highest peak in the Rocky mountains. In consideration of the large amount of valuable information which was to be gained, the Department agreed, and, with the generous assistance of many corporations and private individuals, the expedition was financed.

The members of the committee of the Canadian Alpine Club in charge of arrangements in addition to the two leaders were: Lt.-Col. W. W. Foster, D.S.O., and Col. F. C. Bell, C.M.G., of Vancouver, and A. O. Wheeler, F.R.G.S., of Sidney, B.C., all renowned alpinists, while the technical advisers were Major E. O. Wheeler, son of Mr. A. O. Wheeler and member of the first Mt. Everest

expedition, and Mr. Belmore Brown, of Banff, member of the first Mt. McKinley expedition.

The party which carried out the climb was composed of Mr. MacCarthy, in charge of the first rope, with whom were Mr. Allen Carpe, of New York, representing the American Alpine Club, and Col. Foster; and Mr. Lambart, in charge of the second rope, with Mr. Andrew Taylor, of McCarthy, Alaska, formerly of Ottawa, and Mr. Norman Read, of Texas.

Preparations for the climb went on steadily during the latter part of 1924. A complete plan of campaign was drafted, based on the maps of Mt. Logan prepared by the photographic method developed and perfected by the late Dr. E. G. Deville, Director General of Surveys of Canada. Previous to 1925 no man had ever set foot on Mt. Logan but photographs of it had been taken from Mt. St. Elias, and other points about 20 miles distant, and from these photographs maps had been made which enabled Mr. MacCarthy and Mr. Lambart to map out their route from the base to the summit. As in the final stages of the climb everything had to be carried on the backs of the members of the party, not one unnecessary pound could be taken. To Mr. MacCarthy was assigned the securing of food supplies and to Mr. Lambart the selection of equipment. These were all produced in Canada, and it is to be noted that everything worked out in accordance with the plans made. All food supplies were satisfactory and no piece of equipment failed at the critical moment. These materials were assembled in February, 1925, and later were, by means

(Continued on page 2)

PEAT AS AN AID IN SOLVING FUEL PROBLEM

Commercial Development of Bogs at Alfred, Ontario, Follows Successful Government Experiment

In 1918 the Dominion and Ontario Governments jointly appointed a committee to investigate whether or not peat fuel could be produced commercially. This committee existed for five years by which time the investigations had been carried far enough to point the way to capitalists and industrialists for the successful manufacture of a domestic and industrial fuel from Canada's peat resources.

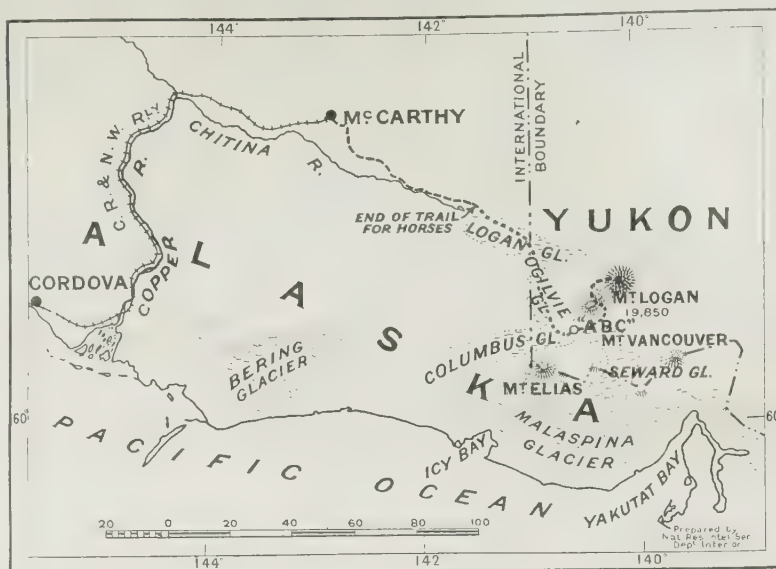
That the work of the committee is being brought to a fruition commensurate with the \$350,000 governmental expenditure appears to be evident from the present operations of a company formed with private capital to develop the peat bogs at Alfred, Ontario, about forty miles east of Ottawa.

On 15th July a visit was paid to Alfred by officials attached to the Dominion Fuel Board and in their opinion the progress attained by the company, considering the delay in commencing this summer's operations, far exceeded expectations. The machines, all electrically driven, were running smoothly. In the process in use an excavator cuts the peat and scoops it up into a series of moving buckets which upturn into a trough that runs the watery mass to a small mill; there, it is macerated by a number of rapidly moving, small hammers. From the macerator the peat pulp emerges on a belt conveyor, 850 feet long, which feeds it to a spreader. This latter machine moves slowly, parallel to the continuously moving belt, cutting the peat into briquets and laying them on the ground to be air-dried. From the excavation to the spreading is one, uninterrupted, machine operation.

Notwithstanding that it requires at least forty days for the briquets to dry there were two to three thousand tons of peat ready for harvesting and shipment to Montreal, Ottawa, and other centres within economic haulage of Alfred. The company anticipates the retailing of peat at prices that will result in a saving of at least \$6 in fuel costs to each householder who uses peat in place of imported anthracite during the stages of the winter season when the severity of the cold is less marked.

The development of the Dominion's resources for the purpose of replacing imports is a matter that directly or indirectly benefits every Canadian. Therefore the extraction of peat from the bog at Alfred is a step in the right direction, regardless of the fact that the company's output can contribute in only a minor way to the solution of Canada's fuel problem this year. Should the venture prove financially successful the way will be paved for the commercial development of numbers of bogs elsewhere in Canada, particularly in the acute fuel zone, and the resulting greatly increased output of peat will render Canada less dependent on imported fuels, which at present constitute the largest item on the wrong side of the Dominion's international trade account.

Canada's exports during 1924 included 12,772 motor trucks, 43,883 passenger automobiles, and parts valued at \$4,992,049 giving an aggregate value of \$31,501,442, according to the Bureau of Statistics.



Map of the Mt. Logan area. Horses were used over the trail indicated for carrying supplies but the party had to walk all the way after leaving the train at McCarthy.

CANADIAN ALPINISTS' BRILLIANT CONQUEST OF MT. LOGAN

(Continued from page 1)

of dog teams, deposited in suitable caches in spots which had been selected during the summer of 1924 by Mr. MacCarthy, who made a reconnaissance trip to the foot of the mountain.

Thus prepared the party set out on their task. They went by steamer to Cordova, Alaska, then inland 191 miles on the Copper River and Northwestern railway to McCarthy. The remaining 156 miles to the summit of Mt. Logan had to be traversed on foot. Horses were used for the packing of supplies for the first 88 miles but from that point forward the members of the party had to do their own packing. They proceeded by way of Chitina glacier, Logan glacier, and Ogilvie glacier. It is to be noted that the latter is named after Mr. Noel Ogilvie, Director of the Geodetic Survey of Canada, and that King peak, and King glacier, passed on the way up, were so named in honour of the late Dr. W. F. King, Chief Astronomer and founder of the Geodetic Survey of Canada.

On the way up the mountain from this base they made six successive camps, the last at an altitude of 18,500 feet, being the highest camp on the continent. The climbing in all occupied 23 days, and at 4:30 p.m. on 23rd June they reached what they had supposed was the summit, only to find that 2½ miles to the eastward was another peak some hundreds of feet higher. After taking a number of photographs they proceeded across the intervening ravine, which necessitated a descent of about 1,000 feet, followed by the still more trying ascent, and succeeded in reaching the actual summit at 8 p.m. After 25 minutes on the summit they retraced their steps, but a blizzard overtaking them they were forced to dig a hole in the snow and shelter themselves as best they could for the night. Their way up the mountain at critical places had been marked by willow wands set in the snow at intervals, as owing to frequent storms and high winds all traces of footmarks are soon lost. The supply of wands had given out before they reached the summit and owing to the blizzard and poor visibility it was impossible to pick up the trail again until the next morning. Their trip back to railhead at McCarthy occupied 20 days, part of it on rafts floating down the Chitina river.

This is very easily told but the task throughout was full of dangers and hardships. Experienced alpinists all over

the world have expressed their appreciation of the magnitude of the feat, and laymen may gain some idea of it from the recollection that the ascent of Mt. St. Elias, much more accessible and nearly two thousand feet lower, was not accomplished until after six separate attempts had been made in a period covering twenty years. Next to the experience and determination of the climbers the success of the expedition was due to, (1) the completeness of the maps of the Mt. Logan area, (2) the thorough reconnaissance made by Mr. MacCarthy in 1924, (3) his taking in of the supplies in February and March, 1925, to a point higher up than had ever before been reached, and (4) the careful working out of all details.

In the fierce storms and low temperature all members of the party suffered from frost bites. The temperature at the summit was 4 degrees above zero and during the nights the thermometer several times fell to 33 degrees below zero. In addition to the low temperatures, which were lower than those recorded in any previous mountain climb, and blizzards, they all suffered greatly from the rarified air which rendered it impossible to put forth more than about one-quarter of the energy which the members possessed at ordinary altitudes. Fortunately there was no loss of life and no one was permanently injured.

As previously noted photographs and observations were taken as opportunity offered. The members of the party looked upon a huge area of land which no human being had ever seen before. The expedition has thus added greatly to our store of geographical and meteorological knowledge; it has proved the accuracy of Canada's system of photographic mapping; and it has shown the tremendous virgin field for mountain climbing in Canada, which is attracting each succeeding year more alpinists from every part of the world.

The quantity of creamery butter made in Canada in 1924 was 184,290,908 pounds, valued at \$63,449,160 according to the Dominion Bureau of Statistics. This production is the largest for any year in the history of the industry and exceeds the production of 1923 by over 21 million pounds. The value of the production shows an increase over that of the preceding year of six million dollars, and almost equals the value for the record year of 1920, the greater value in that year being due to the high average price per pound—57 cents, compared with 34 cents in 1924.

STORIES OF NAMING OF PINCHER CREEK DIFFER

Earliest Explanation Connects It with Tragical End of Prospecting Party in 1864

Pincher creek is a small stream, tributary to the Oldman river in southern Alberta, about the origin of the name of which much has been written. The first known mention of the name of the creek, according to the Geographic Board of Canada, is in a publication of the Geological Survey of Canada dated 1880, where reference is made to the analysis of a piece of lignite found "four miles south of Pincher creek".

The earliest explanation of the name occurs in a book entitled "Ranching with Lords and Commons" published in Toronto in 1903 in which the author John R. Craig, on the authority of Howell Harris, an old timer, writes as follows: "In the spring of 1864 a prospecting party numbering about forty started from Montana, U.S.A., for the north, keeping along the foot-hills of the Rocky mountains from Sun river until they arrived near where Calgary now stands. The party divided here some continuing their journey north to Fort Edmonton, others returning to prospect the mountain streams on their route homeward. The party who had gone to Edmonton, on their return journey to Montana heard that some members of the first returning prospectors had been murdered by Indians. The report was confirmed by discovering some of the horses of the murdered men in possession of Indians. A search was made and close by a stream the remains of a camp were found, and a pair of pinchers which were identified as belonging to one of the missing men. The camping ground where the pinchers were found was near where the late Moses Le Grandeur's ranch is located. Hence the name Pineher creek remains to this day".

Less tragic is the version published in a western newspaper in 1910, which is to the effect that about 1870 Leonard Harnois was prospecting the foot-hills in the vicinity of Pincher creek. When crossing the creek at a point near Duthie's ranch the party lost their pinchers, hence the name.

Still a third explanation is given in a book entitled "Friends of My Life as an Indian" by J. W. Schultz, published in 1923. The author states that the name originated in 1868 in which year Joseph Kipp, Charles Thomas, and John Wrenn scouted for gold along the foot of the Rockies from Montana as far as Edmonton. On their way north they left a pair of pinchers at a camp on a small stream not far north of the Canadian line and did not miss them for several days, when they were needed for use in re-shoeing one of their bulls, and Kipp had to go back for them. He named the stream Pincher creek.

It may be added that Joseph Kipp in later years became well known as a scout and fur trader and built Fort Kipp which is situated at the junction of the Oldman and Belly rivers, about eleven miles northwest of Lethbridge.

There was a slight advance in the production of talc and soapstone in Canada during 1924 according to the Dominion Bureau of Statistics. Sales for the year totalled 11,332 tons worth \$154,480, as against 10,366 tons at \$150,507 in 1923.

NATURAL RESOURCES CANADA

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OTTAWA, SEPTEMBER, 1925

CANADA'S GOLD MINES SET NEW OUTPUT RECORD

Production in 1924 was the Greatest in History
of the Dominion

The production of gold for the year 1924 as reported by the Dominion Bureau of Statistics, showed an output of 1,525,380 fine ounces valued at \$31,532,402, an increase of 2.4 per cent above the total of the previous year. The production in 1924 was the greatest in the history of Canada. In the year 1900 when the production of the Yukon placers was at its height, the total lode and placer gold produced in Canada was 1,350,057 ounces valued at \$27,908,153.

Production of Gold by Provinces

Province	Fine ounces	Value
Nova Scotia.. . . .	1,047	\$ 21,642
Quebec.. . . .	883	18,253
Ontario.. . . .	1,241,726	25,668,754
Manitoba.. . . .	1,180	24,393
British Columbia.. . . .	245,719	5,079,462
Yukon.. . . .	34,825	719,897
Canada.. . . .	1,525,380	\$31,532,402

Mr. R. W. Cautley, D.L.S., of the Topographical Survey, Department of the Interior, has completed the survey of that portion of the boundary between the province of Alberta and the Northwest Territories lying between Slave and Little Buffalo rivers. This boundary is the 60th parallel of north latitude and Mr. Cautley's work consisted in cutting out the line and erecting permanent monuments.

The miscellaneous products of dairy factories in Canada in 1924 comprise whey butter and ice cream, and cream, whole milk, whey cream and butter-milk sold. The total value of these products in 1924 was \$26,465,559, an increase of nearly two million dollars compared with the preceding year according to the Dominion Bureau of Statistics.

The output of zinc for the year 1924 as reported by the Dominion Bureau of Statistics was 98,909,077 pounds (49,455 tons) valued at \$6,274,791 as against 60,416,240 pounds valued at \$3,991,701. The increase amounted to 64 per cent in quantity and 57 per cent in value. This large increase was caused by the enlarged production in British Columbia. Quebec was the only other province to produce zinc; there an increase was reported of about two and one-half million pounds.

PROTECTING THE NATION'S HEALTH*

Advances Made in Fumigating Ocean-Going Ships as a Safeguard Against Plague

The health of a nation is its most fundamental asset, and a true natural resource. It is from this foundation that the various forms of economic wealth as well as national well-being largely spring. A recognized function of modern government is to safeguard the health of the people, and, due to the rapid advances made in the sciences of bacteriology, preventive medicine, and hygiene during recent years, the task has been rendered considerably easier than formerly.

As instances of the dangers which continually threaten, it is only necessary to recall the cholera epidemics which spread over parts of Canada during the second quarter of the 19th century; to remember that similar dangers still exist, and must be continually guarded against. It is not by chance that Canada is now practically immune from similar outbreaks, but owing to the increased vigilance of her health officers working in the light of improved scientific knowledge. Vessels arriving at our ports from the populous nations of the tropical Orient, as well as the numerous countries of Europe, Africa, and South America, are the chief sources of danger, and special precautions have to be taken in clearing such ships to make sure that they are free from the germs of disease.

Plague is one of the major quarantinable diseases. It is not only infectious, but very dangerous and often ends fatally. It is now known definitely that rats and the fleas which infest their coats are carriers of the plague bacillus. One of the most prolific breeding places for rats is on board ship, and the destruction of these rodents is achieved most effectively by systematic fumigation.

Fumigation of ships to be most effective should be performed periodically and ordinarily at not more than six-month intervals. This requirement is now a part of the Quarantine Regulations of Canada and applies to all vessels entering Canadian ports engaged in trade with foreign countries. The International Sanitary Convention and the Pan-American Sanitary Code embody similar provisions.

On the arrival of a vessel at a Canadian quarantine station the ship's master is required to produce a fumigation certificate, properly endorsed, showing the date when the vessel was last fumigated. If a subsequent period of more than six months has elapsed (or a somewhat longer period in special cases), the quarantine officer orders the vessel to prepare for fumigation, immediately following the unloading of the cargo.

Sulphur has long held first place as a fumigation agent. One advantage which has held in its favour is its strong properties as a disinfectant, so that in addition to destroying vermin and bacteria, it acts as a precaution against their re-establishment in the same surroundings. Hydrogen cyanide gas is gradually supplanting sulphur as a fumigating agent. It is readily prepared and is the most powerful destructive agent known for vermin. At the same time it has no effect upon food, fabrics,

or metals. The gas is not a disinfectant and being colourless and odorless gives no warning of its presence. Its use in a pure state is therefore dangerous to the lives of persons associated with the process. In practice this last objection is overcome by the use of respirators on the part of trained operators, and by the further precaution of mixing with the hydrogen cyanide gas a sufficient quantity of a lachrymatory or "tear" gas to give ample warning of its approach.

So far as Canada is concerned the use of hydrogen cyanide gas is not yet general. It was introduced for the first time at the port of Montreal this season. Its adoption at other Canadian ports is receiving the careful consideration of the federal Department of Health, which administers the Quarantine Regulations.

TURNER VALLEY OIL FIELD DEVELOPMENT*

Increased Activity As Result of Successful
Operations at Royalite No. 4 Well

The Turner Valley oil-field, sometimes known as the Black Diamond or Okotoks field, has lately come into prominence because of the opening up late last fall of a well which has been producing all through the winter several thousand gallons a day of a low-boiling gasolene. This well is the Royalite No. 4, owned by a subsidiary company of the Imperial Oil Company.

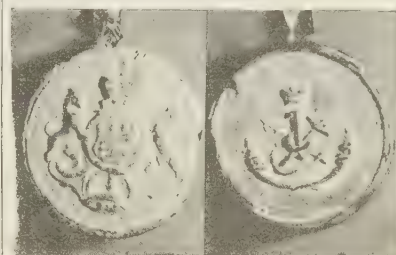
The Turner Valley field is situated in the foot-hills of the Rocky mountains about forty miles southwest of Calgary. Oil was first discovered in this field in 1914, a find which led to the Calgary oil boom of that year. The hopes and expectations of those days were unrealized and there have only been two or three wells drilled in which oil has been found. The production of oil has amounted on an average to about ten thousand barrels a year since 1916.

Several of the wells drilled in the field yield large quantities of natural gas from which two or three pints of gasolene per thousand cubic feet of gas can be extracted, and two absorption plants produce yearly about 400,000 Imperial gallons of gasolene. The gas after treatment is piped to Calgary to supplement the supply from the Bow Island and Foremost fields. No. 4 Royalite well, commenced in 1922, had been drilled to a depth of 3,185 feet, and during the winter of 1923-4, yielded over six million cubic feet of gas a day. In the summer of 1924 drilling was continued and at 3,740 feet a tremendous flow of gas of over twenty-one million cubic feet a day was opened up. This gas, at a high pressure, got out of control and much damage was done to the well. The gas caught fire and burned for three weeks until it was extinguished. However, the flow was finally controlled and in passing along a mile and a half of piping, large quantities of a light gaso-

CUMBERSOME SEALS WERE IN USE A CENTURY AGO

Old Documents in Records of the Department of
the Interior Bear Interesting Specimens

Many old documents are included in the records of property titles in connection with the Ordnance and Admiralty lands, preserved for reference purposes, in the Ordnance, Admiralty, and Railway Lands Branch, Department of the Interior. An interesting feature of some of these old documents is a huge official seal of the Province of Upper Canada. This seal is made of beeswax, measures four and a half inches in diameter, and is half an inch thick. On one side is embossed the British coat of arms and on the other the coat of arms of the Province of Upper Canada. Both surfaces are covered with a heavy brown paper and the whole seal hangs from the lower edge of the document by two strings of sheepskin.



British
Coat of Arms

Arms of
Upper Canada

The seal shown in the illustration is attached to an official grant of land executed in the year 1802.

lene separated out. Additional separating apparatus increased the yield until for the last few months over four hundred barrels a day of gasolene of 73 degrees Baumé specific gravity have been obtained.

On account of the impurities present in the gas it has not yet been possible to treat it for the recovery of gasolene in the ordinary way nor to utilize it for domestic consumption, though these difficulties will be overcome when a purification plant is installed. During the winter and spring a fleet of tank trucks has been used to convey the gasolene to the railway sidings at Okotoks but a pipe line is now under construction. This important and successful development has attracted much attention to the field and great activity in new drilling is being shown. The Imperial Oil Company has commenced to drill two new wells, one near No. 4, and one on a site a mile and a half to the southeast. The latest pattern of rotary drilling equipment is being used. Over a dozen other companies have either commenced to drill in the vicinity or are planning to commence operations at an early date. It is hoped that by going deeper than most of the old wells were drilled large oil reservoirs will be struck.

However, on account of the alternations of hard and soft beds in the strata in this area and the steepness of their dip, drilling is very difficult and expensive. Trouble has been experienced in almost every one of the twenty or thirty wells drilled during the last ten years and it can hardly be expected that the present undertakings will avoid all the difficulties met in the past. Meanwhile, progress will be watched with great interest.

*Prepared under the direction of Dr. J. A. Amyot, Deputy Minister, Department of Health, by Mr. G. H. Parry, Quarantine Division.

*Prepared under the direction of Dr. Charles Camsell, Deputy Minister of Mines, by Mr. R. T. Elworthy, Mines Branch.

SET ASIDE SHOOTING GROUNDS ON PRAIRIES

Areas in Western Canada Will Provide
Healthful Recreation For Public

The Department of the Interior has recently set aside a number of public shooting grounds in the Prairie Provinces, and has added eleven bird sanctuaries to those already established there. These actions are not contradictory but complementary parts of the general plan of migratory bird conservation. Migratory birds are deemed so valuable from the standpoints of food supply, the combating of weed and insect pests, and (so far as game birds are concerned) as a means of healthful recreation, that they are protected on both sides of the International Boundary under the terms of the Migratory Birds Treaty, entered into by Canada and the United States in 1916. As one of the objects of keeping up and increasing the numbers of game birds is to provide healthful recreation for our own citizens and, further, since an important factor in attaining these objects is the co-operation of sportsmen, it was deemed advisable to prevent the complete alienation of such Dominion lands as offer facilities for shooting, and this has been done by setting aside permanent public shooting grounds in suitable localities. These shooting grounds are situated as follows: six in Manitoba, twelve in Saskatchewan, and thirty-two in Alberta. The difference in the numbers in the various provinces is compensated for, generally speaking, by the greater size of the individual areas in Manitoba and Saskatchewan as compared with those in Alberta.

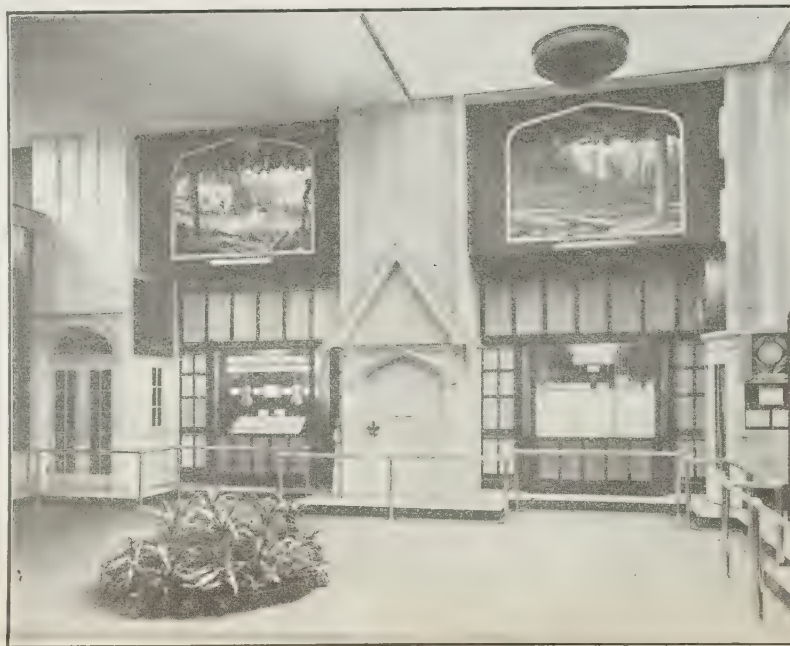
It is well known to sportsmen and bird lovers that the prairies and great plains regions contain the most important breeding grounds for wildfowl on the continent. This area embraces, speaking roughly, the provinces of Manitoba, Saskatchewan, and Alberta, and a strip of territory along the northern border of the contiguous part of the United States. Here thousands of marshes and reedy lakes from time immemorial provided food and security for all kinds of waterfowl, but the progress of settlement, with the consequent draining of swamps and marshes, tends steadily to reduce the area of these breeding grounds, thereby lessening the number of wildfowl and even threatening the extinction of some species. To prevent such an occurrence suitable areas have been set aside as bird sanctuaries, that is places where birds are suitably protected and may thus increase in numbers. The Department of the Interior has established seven sanctuaries in Alberta and eleven in Saskatchewan; and in Manitoba the Federal forest reserves have been made game preserves under the provincial game act. Besides these, the Dominion Government has a number of sanctuaries in British Columbia and Eastern Canada, all of the foregoing being administered through the Canadian National Parks Branch of the Department. The provinces concerned have co-operated in respect to these refuges, and in addition other sanctuaries have been established by provincial governments and in some cases by private individuals, all of them assisting in the conservation of this important natural resource.

CANADIAN FORESTS AT WEMBLEY

Comprehensive Exhibit Impresses Visitors with Quality and
Range of Our Wood Products

Canada's pre-eminence as the "soft-woods storehouse of the Empire" is forcefully impressed on the mind of visitors to the British Empire Exhibition at Wembley, England, by the large and comprehensive exhibit of the Forestry Branch of the Department of the Interior.

charcoal, wood alcohol, acetate of lime; musical instruments; and models showing timber tests as carried out in the Forest Products Laboratories of the Department of the Interior. The panels and wall cases are separated by larger exhibits showing the commercial application of the various species, such as



Canada's Forests at Wembley—Photograph of a portion of the exhibit showing the attractive manner in which the woods are displayed. In the upper part of the view may be seen two of the historical pictures indicating the successive stages of the growth of the forest industry.

Canada, with her more than one million square miles of timber lands covered with forests containing about 150 tree species, produces the finest structural timber in the world as well as woods for many other industrial purposes; and this fact has been strikingly brought out in the Wembley display.

Prominent in the exhibit is a wonderful array of 184 panels of 40 different woods, most of which it is demonstrated are obtainable in large quantities. The woods are grouped according to character, each group being separated by various exhibits of structures and articles made of these particular woods. The first object that attracts the eye upon approaching the forestry exhibit is a large portico in the middle of the main wall, the columns supporting which consist of ten-foot sections of western yellow pine, with the bark left on. Looking through these columns a spacious landscape may be seen, the main feature of which is a model of a groundwood pulp-mill, with water flowing in the river and out of the spillway and tail-races. As part of this feature of the exhibit great rolls of Canadian newsprint are shown. Near by is a group of giant timbers which includes two solid blocks of Douglas fir, each twelve feet high and practically five feet square; a segment of Douglas fir eleven feet in diameter, and a timber sixty-four feet long, sixteen inches wide, and eight inches thick.

Between the panels, which are ranged along the walls, are eight glass cases containing specimens of all Canadian woods; miscellaneous forest products, such as artificial silk, yarns, textiles, wall-board, maple sugar, spruce gum, cascar extract, cedar oil; results of distillation of hardwoods, including

aeroplane parts, organ fronts and pipes, piano sounding boards, etc.

The history of Canada's forests is also eloquently told on the walls, above the panels and wall cases, in a series of stage settings, showing the growth of the lumber industry throughout the past four centuries, the stages of its development being represented by the Explorers, the Pioneers, the Raftsmen, and the Steam-loggers. Four mural paintings tell the story of the journey of the log from the forest to the mill, and two large pictures in wood mosaic depict lumbering scenes in Western Canada.

In the Industrial section is exhibited a comprehensive group of articles manufactured from wood, ranging from a complete bungalow of two rooms, and giant silos for the storage of farm fodder, to wooden spoons.

The exhibit has attracted a great deal of attention as shown by the large crowds which have constantly gathered about it and by the many inquiries made of the attendants, and also by the numerous articles and paragraphs that have appeared in the British press, and there is no doubt that in thus making known the quality and range of Canadian forest products to the citizens of the Empire, the exhibit will aid powerfully in the development of this great industry.

Increases in both quantity and value were recorded in finally revised statistics on the production of silver in Canada during 1924 as reported by the Dominion Bureau of Statistics. The output reached 19,736,323 fine ounces valued at \$13,180,113 as against 18,601,744 fine ounces valued at \$12,067,509 in 1923.

FIRE PROTECTION IN OUR NATIONAL PARKS

Resourceful Wardens Adopt Unusual
Methods to Fight Forest Fires

The protection of the Canadian National parks in the Rockies from fire presents special difficulties owing to the wild and rugged nature of the country. The great majority of the fires that start in the parks begin in the valleys and work up the mountain slopes, steadily increasing as they go, the distance from the fire fighters' base of supplies, and increasing also the difficulties involved in the taking of men and equipment up steep slopes where often no trails exist. Sometimes, however, the physical features of the country which obstruct the efforts of fire fighters can be resourcefulness and energy be utilized to good advantage. This was instanced recently in Glacier National park in British Columbia where a fire which threatened to attain serious proportions was quickly and effectively extinguished by utilizing the drop of nearby mountain streams to apply water to the fire, six streams of good pressure being supplied by the force of gravity.

The fire broke out in a valley near Glacier and was discovered by the local park wardens. As soon as the park superintendent was informed of the extent of the fire he rushed to the scene taking with him thirty men, and also a portable fire pump and other equipment. Notwithstanding the heroic efforts of the two wardens with axes, and grubbers, the fire had continued to burn strongly up the slope and had covered over 100 acres when the re-enforcements arrived. The futility of attempting to control the fire with one pump was soon realized. Fortunately there was water available on either side of the fire, in two streams running down the mountain side, less than a mile apart, and the parks officials determined to make use of the "head" of these streams to apply water to the fire. Three small dams were placed in each of the streams and from the reservoirs thus formed lines of hose were laid diagonally down hill to the fire. The connections at the dams were made by means of ordinary galvanized iron nipples thrust through the walls of the dams, and the force of gravity in the drop of thirty or forty feet was sufficient to send streams of water fifteen or twenty feet from the nozzles. Six streams were brought to play on the fire from above.

At the same time the pumping unit was operated from below the fire and between the two lines of attack the fire was soon brought under control. The gravity hose lines were kept in operation for several days until all danger had passed, thus releasing the portable pump for use in case of emergency elsewhere in the park.

The success which accompanied the test of this method of fire-fighting in the parks under actual fire conditions has resulted in a decision to make wider use of it in the future in parks protection work.

The production of cheese in Canada in 1924 totalled 151,673,880 pounds valued at \$24,518,734 according to the Dominion Bureau of Statistics. Compared with the preceding year an increase of 49,504 pounds is shown in the quantity, but a decrease of over four million dollars in the value. The average price per pound was 16 cents in 1924 and 19 cents in 1923.

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WILD LIFE CONVENTION TAKES FORWARD STEP

Game Conservationists Unite on Plans to
Protect Wintering Grounds of
Migratory Birds

Two game conferences were held in August in Denver, Colorado, at which action was taken which will have an important bearing in connection with the conservation of wild life not only in the United States but in Canada as well. The conferences were those of the International Association of Fish, Game and Conservation Commissioners, of which Mr. J. B. Harkin, Commissioner of Canadian National Parks, was president, and of the Western Association of Fish, Game and Conservation Commissioners. In addition to a very large attendance of the membership of these two associations there were at the conferences representatives of the Audubon Society, the American Game Protective Association, the Isaak Walton League, the Permanent Wild Life Protection Fund, the United States National Park Service, the United States Forestry Service and the United States Biological Survey. The Canadian representation in addition to Mr. Harkin included Mr. Hoyes Lloyd, Supervisor of Wild Life Protection, Canadian National Parks Branch, and Mr. Benjamin Lawton, Chief Game Commissioner of Alberta.

The importance to Canada of these two conferences is that, as a result of the meetings, all the important wild life conservation organizations in the United States have got together on the subject of bird refuges in the Southern States, and that, consequently, it is expected rapid advances will be made in this matter of the establishment of game refuges. In so far as the bird life of this continent is concerned one of the greatest needs to-day is that there shall be ample feeding grounds in the Southern States to carry the birds through the winter. The migratory birds breed in Canada and it is improbable that any question of the scarcity of a summer food supply will ever arise. The situation is quite different on the wintering grounds of the birds. In the first place the continent is very wide in the north and tapers rapidly as it goes south. Nevertheless all the bird life of the wide north has to be cared for in the somewhat limited areas of the south. What perhaps is most serious, however, is the fact that in recent years the Southern States are being rapidly opened up by settlement. Great areas, formerly wild, are coming under cultivation and large marsh areas are being drained. The natural result is an imperative need for the setting apart of large areas in the winter grounds of the migratory birds in

(Continued on page 3)

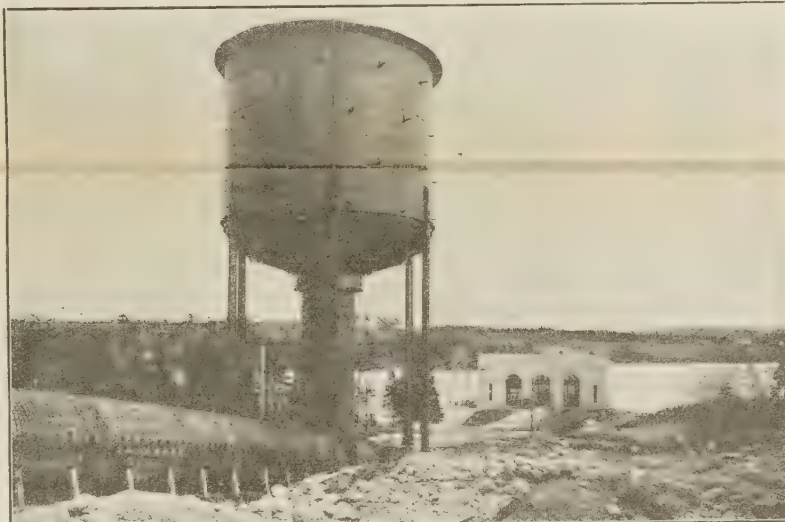
WATER-POWER IN THE MARITIMES

Available Power Resources of New Brunswick, Nova Scotia,
and Prince Edward Island Are Extensive

Since the days of the early settlers, water-power has held an important place in the lives of the inhabitants of the Maritime Provinces of Canada. Of the innumerable rivers and small streams nearly all have been the scene at one time or another of small saw-mills or grist mills meeting local needs, with here and there one more pretentious supplying lumber for provincial or export

acquire electric energy for sale to municipalities or others desiring it.

The Nova Scotia Power Commission was created in 1919, and the New Brunswick Electric Power Commission the following year. Since then modern hydro-electric developments with a total installed capacity of 34,000 horse-power have been developed by these bodies, all of which is in actual use.



Water-Power in the Maritime Provinces—Development of the Nova Scotia Power Commission at St. Margaret's bay. The two small generating stations on the bay supply nearly 20,000,000 kilowatt hours a year to the city of Halifax.

trade. The great number of small mills in existence even at the present time is a feature of the country.

Until quite recently, however, water power has been chiefly of local interest only, but by 1914, public interest in the subject resulted in a request to the Dominion Water Power Branch to extend its investigatory work into Nova Scotia. Since then, with subsequent extensions to New Brunswick, investigatory work has been continuously carried on by this branch of the Department of the Interior in co-operation with local authorities.

To those who thought the water-power resources of these provinces negligible, the results have been surprising. Available power to the extent of 550,000 horse-power has so far been investigated in Nova Scotia and New Brunswick, and the list is constantly growing.

As a result of information made available by these investigations, public interest was stimulated, legislation was passed and government bodies formed in both New Brunswick and Nova Scotia with power to develop or otherwise

At present further projects are planned in both provinces. The most important is at Grand Falls in New Brunswick, the largest individual power site in the Maritime Provinces. Plans for new developments and extensions are active in Nova Scotia also, such as extensions to the St. Margaret's Bay and Sheet Harbour systems. Studies are in hand for new developments on the St. Croix river, Bear river, Liscomb river and the Mersey river. Developments on the last named river taken as a whole constitute a concentrated source of power comparable with that at Grand Falls on the St. John river in New Brunswick.

The total water-power development in the three provinces at February, 1925 was estimated by the Dominion Water Power and Reclamation Service at 110,900 horse-power of which 44,650 was in New Brunswick, 64,000 in Nova Scotia, and 2,275 in Prince Edward Island. For the total population of over a million the power development amounts to 109 horse-power per thousand of population

(Continued on page 3)

CANADA PROMINENT AT ASTRONOMICAL UNION

Our Observatories Will Co-operate in
Research Work With Other
Countries

Canada's position in the realms of astronomical research is indicated by the leading part taken by the Canadian delegates at the second triennial meeting of the International Astronomical Union held at Cambridge, England, from the 14th to the 22nd of July, 1925. The Union, which was formed in 1919, is now composed of twenty-two countries; Canada has been a member since 1920. General meetings of delegates are held every third year for consultation and the arrangement of international co-operation in astronomy. In the intervals between meetings international co-operation is looked after by twenty-eight standing committees covering the various fields of astronomical research. Canada is represented at present on nine of these committees and, considering the Dominion's population, this is perhaps the largest representation enjoyed by any country.

Canada's membership in the Union is on behalf of the Government, through the Department of the Interior. The Department has also caused to be organized a Canadian National Committee of fifteen members to carry on the business of the Union as it affects Canada.

Five Canadian delegates attended the recent meeting in Cambridge. Two of these, Mr. R. Meldrum Stewart, Director of the Dominion Observatory, Ottawa and Dr. J. S. Plaskett, Director of the Dominion Astrophysical Observatory Victoria, British Columbia, were officially designated as Government delegates; the others were Prof. C. A. Chant and Prof. J. C. McLennan of Toronto University and Dr. F. Henroteau of the Dominion Observatory. The total number of delegates and invited guests was nearly two hundred.

The formal business of the Union was carried on largely in the meetings of the various committees, which were, naturally, largely of a technical character. Even more useful than these formal meetings were the opportunities for discussion of common problems and for arrangements for co-operation afforded by so large a gathering of astronomers. An example of this is the informal arrangement, on the initiative of the Dominion Observatory, for the co-operation of some twelve or fifteen observatories in attacking a particular problem in connection with variable stars of short period.

One of the most interesting developments was the announcement of the success of a difficult observational ex-

(Continued on page 4)

RAW MATERIALS OF THE CERAMIC INDUSTRIES*

Large Variety of Clays Employed by Canadian Manufacturers—Special Purpose Clays Scarce

In the ceramic industries a large variety of clays is employed, ranging from impure brick clays to high grade white china clay. Clays and shales suitable for making common brick and high grade face brick are plentiful and widely distributed in Canada. The bricks produced from these clays are not only of good strength and form but also embrace a wide range of colour; and they are manufactured in an assortment of surface textures. There is little need for importing any building brick into the country since almost any desired artistic effect may be obtained by the use of brick made from Canadian clays.

Unfortunately as much cannot be said for the special purpose clays as for the brick clays, since their distribution in Canada is rather limited. Nevertheless, there are large and valuable deposits which are indeed important resources.

Fireclays occur in British Columbia, Alberta, Saskatchewan, Ontario, New Brunswick, and Nova Scotia. Firebrick and refractory shapes are made from local clays in British Columbia, Saskatchewan, and Nova Scotia. Such firebricks as are manufactured elsewhere in Canada are made from imported fireclays on account of the remoteness of domestic deposits.

Pottery clays of very good quality are obtainable in Alberta, Saskatchewan, New Brunswick, Nova Scotia, and Prince Edward Island. Those of New Brunswick and Prince Edward Island, and also some from Nova Scotia are red burning and produce a good body for art pottery, while in Alberta, Saskatchewan and Nova Scotia, there are deposits of light-coloured stoneware clays. The deposits in southern Saskatchewan supply the requirements of a pottery at Medicine Hat, Alberta, and the Musquodoboit deposits in Nova Scotia are being worked as a source of raw material for a pottery at St. John, New Brunswick.

In the southern Saskatchewan field a high grade ball clay is also being worked, and shipments are made to various points in Canada. This clay is refractory, highly plastic, and burns to a very good white. It may be regarded as one of our most valuable clay resources.

Kaolin or china clay is known to occur in but few localities in Canada, and has only been produced on a commercial scale at one point, namely, near St. Remi, in the province of Quebec. A deposit in northern Ontario has received considerable attention recently, but until railway facilities are available, it cannot become a producer. In British Columbia, a deposit, apparently of commercial value, occurs near Williams lake. Other deposits of kaolin are on record, but such information as is available concerning them does not warrant including them as potential producers.

One of the most important raw materials at present produced in Canada for use in ceramic industries is feldspar. There are extensive deposits of this mineral, especially in Ontario and

**Prepared under the direction of Dr. Charles Camsell, Deputy Minister, Department of Mines, by Mr. R. S. Hamer, of the Frechette, Mines Branch.*

CANADA'S BEEF CATTLE INDUSTRY*

Our Great Range Areas Will Play Prominent Part In Its Future Development

The value of Canada's range areas as an important factor in the beef cattle industry of the Dominion has for some time been recognized, and during the past two years the Department of the Interior and the Department of Agriculture have been working out a joint program whereby the development of these areas will give greater permanency and stability to the beef cattle business of the country.

The present situation in the beef cattle industry is due almost directly to the problem of marketing. The profitable trade in unfinished cattle which was enjoyed during the years of high prices intensified the practice of heavy fall marketing. With over 70 per cent of the cattle annually sold coming on the market during the last four months of the year all classes naturally suffered in price. When the market was on a high level, this condition did not cause producers acute concern, but after the collapse of prices in 1920 it soon became apparent that in order to distribute marketing throughout the year and to market a large percentage eligible for top prices, winter feeding would have to be more widely resorted to.

The Department of Agriculture has therefore, been steadily promoting winter feeding, but has realized from the first that any policy with that end in view must be based on the principle that a relatively low initial cost of feeder cattle is an essential factor in making this phase of the business a profitable one. For many years winter feeding of cattle has been carried on more or less extensively in several counties in western Ontario, and the system of farming followed in that part of the province lends itself to this practice. Under existing conditions as regards land values and general overhead expenses, however, feeder cattle cannot be raised at low cost in the majority of these districts. In the grain growing areas in Western Canada an immense quantity of feed is available annually, much of which is practically valueless unless fed to cattle. Here again feeder cattle cannot be raised at a low cost and, as is the case in western Ontario, winter finishing of cattle on an increased scale can be developed only by providing a steady and adequate supply of well-bred feeder cattle which have been produced at a minimum cost.

Clearly the range areas of the Dominion are the logical breeding grounds for the production of feeder cattle under low overhead cost. It is in the range herds that the good blood annually distributed from the pure bred herds of the country has been most consistently utilized, and Canadian range herds of to-day have moreover had the advantage of the best blood which has been available to the rancher in the past fifty years. The policy which is now being

Quebec, producing a large tonnage annually of high grade potash feldspar. The major portion of this goes to the United States, where it is ground and used in the manufacture of porcelain, vitreous enamels, and glass.

Other mine products are used extensively in the ceramic industries, many of which are found in Canada, but for certain reasons their production for ceramic use is limited at present.

worked out jointly by the two Departments therefore is one of safeguarding, extending and moulding the ranching industry so as to make it a permanent and dependable source of supply for high-grade young feeder cattle to be finished in the grain growing areas in Western Canada and in feeding districts in Ontario. A very important contribution to the joint policy was made by the Department of the Interior last spring in increasing the maximum acreage which can be held by one lessee to 25,000 acres and providing for the issuing of closed twenty-one year leases, under certain conditions, in Alberta and Saskatchewan. These changes will provide for greater permanence of tenure and will doubtless infuse new confidence into the ranching business.

The development of this policy in Canada will naturally involve considerable change in practice on the part of many ranchers. Instead of carrying their steers until three or four years of age, and selling them off the grass as overweight, and frequently half-finished beef, at a period of the year when the market is usually at its lowest point, it will be necessary for them to feed their calves during their first and possibly their second winters, and to put them on the market as well-grown yearlings or two-year-olds. Under favourable conditions, an expanding demand for range-bred calves may even be developed, thereby facilitating an annual turnover. The waste of good material in the present ranching practice is fully realized by ranchers, and if a profitable outlet for young range steers can be developed they have expressed themselves as being fully prepared to remodel their business in order to take advantage of it.

In popularizing young range bred steers for feeding purposes, the Department of Agriculture has strongly supported both financially and otherwise the feeder shows first organized at Winnipeg, Moose Jaw, and Calgary in 1923. Approximately 90 per cent of the cattle entered in these events in both 1923 and 1924 were range-bred steers. During the past two winters these cattle have demonstrated that they can hold their own in competition with the best steers from the farms of Ontario and the mixed farming districts of the West.

In the fall of 1924 the Dominion Live Stock Branch paid the one-way travelling expenses to Winnipeg, Moose Jaw, or Calgary of any farmer from Eastern Canada who brought back with him for finishing purposes one or more loads of cattle, purchased either at one of the feeder shows or direct from a rancher. Similar assistance during the coming fall for a period of three months commencing September 1 has recently been authorized by the Minister of Agriculture. This service is being rendered with a view to enabling eastern cattle feeders to perfect a connection with Alberta and Saskatchewan stock-growers on the strength of which orders in future may be executed without necessitating a personal trip West on the part of the purchaser.

**Prepared under the direction of Dr. J. H. Grisdale, Deputy Minister of Agriculture, by Mr. R. S. Hamer, of the Live Stock Branch.*

LANDMARKS STILL RETAIN EARLY NAMES

Les Mille Roches and The Thousand Islands Were Known To Voyageurs

Two landmarks of the voyageur as he paddled up the St. Lawrence river were "Les Mille Roches", a rapid above Cornwall and "Les Milles Iles", above Brockville. The first name means "The Thousand Rocks", the second "The Thousand Islands". Both are in use to-day, the former in the original French form as the name of a village, the latter in the English form. And just as the word "Thousand" is used in the one case to designate the numerous rocks in the river at this point, so it is to be understood in the second case as indicating not that there are 1,000 islands, more or less, but only a large number. Modern usage applies the name to the islands, small and large, on the stretch of the river between Brockville and Kingston, but the name signified, originally, the smaller islands on the shorter stretch between Brockville and Gananoque.

The first reference to the Thousand Islands on maps in the collection of the Geographic Board of Canada is one by de Lery dated 1727, where "Les Mil Isles" are indicated. Few of the islands possessed names before the war of 1812-14 with the United States. After the war Captain Wm. Fitzwilliam Owen (1774-1857) surveyed lake Ontario for the Admiralty in 1815 and 1816, following this up in 1818 with a survey of the St. Lawrence river between lake Ontario and Cornwall. The results of his survey of the river appear on a chart in five sheets, published in 1828, which shows that he had thought out an ingenious scheme of nomenclature for the islands, the result of which was the entwining of the history of the war with the geography of the region.

The group of seventeen or more islands at Brockville named about 1812 after Major General Sir Isaac Brock, he called the Brock group, giving to the individual islands the names of various officers who had seen service in the war, such as Cockburn, Conran, de Rottenburg, de Watteville, Everest, Sheaffe, Sparrow, Stovin, and Skelton.

Higher up came the Hydrographer group of some nine islands in which those commemorated include Owen himself and his assistant, Bayfield. The Indian group includes Tecumseh island. Another group was called the Old Friends and another the Amateur islands.

In the neighbourhood of Gananoque, Owen named the Admiralty group, the Lake Fleet group and the Navy islands. In the Admiralty group are commemorated various members of the governing body of the British navy at the time, including Viscount Melville and Charles Philip Yorke. Islands in the Lake Fleet group were given the names of vessels that had formed part of the British fleet on the Great Lakes, such as Aspasia, Astounder, Belabourer, Bloodletter, and Deathdealer, while the Navy islands were named after naval officers including Downie, Collier, Mulcaster, Fisher, Popham, and Spilsbury.

The total number of dairy factories in operation in Canada in 1924 was 2,998 and the total value of production was \$124,143,470 according to the Dominion Bureau of Statistics. This is a decrease of nine in the number of factories and an increase of \$4,023,080 in the value of product, compared with 1923.

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OTTAWA, OCTOBER, 1925

WATER POWER IN THE MARITIMES

(Continued from page 1)

as compared with 527 in Quebec and 518 in Ontario.

Excepting Prince Edward Island, where the power sites are small and few, the moderate development of water power in the Maritime Provinces as compared with some of the other provinces is not due to lack of water-power resources. That is evident from the figures of available power on the files of the Dominion Water Power and Reclamation Service. It is quite probable that an abundance of coal has been the principal deterrent factor. But with the rising costs of coal and a knowledge of the resources available, has come a decided increase in water-power construction. In fact, the utilization of hydro-electric power for the operation of coal mines is in contemplation, and the establishment of industries based on hydro-electric power has tended to stimulate coal consumption.

There is little doubt that the figures just given for the developed power in 1925, will be greatly exceeded in a short time. In both Nova Scotia and New Brunswick, the plans are toward a transmission system between industrial centres to which generating stations will be connected as needed so that an ample supply of potential energy will be available for any of the industries or manufacturing activities which this district by reason of its abundant raw material and unexcelled shipping facilities, is peculiarly adapted.

At the present time, a large amount of raw material is shipped out in its natural state for manufacture in other parts of the world, but already with the certainty of ample power being available, there are concrete evidences of a tendency to manufacture within the Maritime Provinces, where raw material is abundant, labour conditions are good, and shipping facilities excellent.

The developments at Sheet Harbour and St. Margaret's Bay, are examples of the type of development on the ordinary small river and of the amount of power available from small drainage basins in this district. The total drainage area tributary to St. Margaret's Bay is only 100 square miles, but large storage permits of complete regulation of the large run-off and two small generating stations supply nearly 20,000,000 kilowatt hours a year to the city of Halifax.

At East River Sheet Harbour, which has a drainage area of 216 square miles, two plants deliver over 11,000 horse power. Both here and at St. Margaret's

COPPER PRODUCTION IN 1924 HIGHEST SINCE WAR PERIOD

Output of Canadian Mines Exceeded One
Hundred Million Pound Mark

Copper production in Canada, as reported by the Dominion Bureau of Statistics, for 1924 reached 104,457,447 pounds, with a value of \$13,604,538 as compared with 86,881,537 pounds valued at \$12,529,186 in 1923. This was an increase of 20 per cent in quantity and 8 per cent in value. The year 1924 was the first since 1913 that Canada's copper production was over the 100 million pound mark. During the years 1915 to 1918 inclusive, the production was above 100 million pounds.

The production included: 36,979,424 pounds contained in nickel-copper matte produced at Sudbury during the year, part of which was exported and part refined in Canada; 35,109,895 pounds contained in blister copper, a small part of which was refined at Trail, British Columbia, the remainder being exported to the United States for refining; 31,825 pounds contained in copper sulphate which was made at the Trail, B.C., and Thorold, Ontario, smelters; and 32,336,303 pounds, the estimated recoveries from ores, concentrates and residues exported for treatment. The corresponding figures for 1923 were: blister copper 31,384,817 pounds; copper in matte 31,538,710 pounds; copper in copper sulphate, 76,784 pounds; and copper contents of exported material, 23,881,226 pounds.

Copper Production by Provinces

	Quantity Pounds	Computed Value \$
Quebec	1,893,008	246,546
Ontario	37,113,193	4,833,622
Brit. Columbia	65,451,246	8,524,370
Canada	104,457,447	13,604,538

Bay additional power is available when required.

The Musquash plant of the New Brunswick Electric Power Commission is very similar to the St. Margaret's Bay development and delivers about 11,000 horse-power to St. John, Moncton, and other places in southern New Brunswick.

The power possibilities at Grand Falls in New Brunswick exceed those of any site so far developed in the Maritime Provinces. The St. John river has a drainage area of 8,420 square miles at this point, and falls a total of 119 feet, of which 70 feet is a sheer drop over Grand falls proper, and the remaining 49 feet is in the 4,000 feet of gorge below. The dam at the head of the falls will give a head of 132 feet. The power available is estimated at 140,000 horse-power.

Other modern developments of considerable size are the Maine and New Brunswick Power Company's plant of 8,400 horse-power at Aroostook Falls; Fraser's Limited on the Madawaska, 2,700 horse-power; The Canadian Cottons Limited on the St. Croix, 3,000 horse-power; The Bathurst Co. Limited at Great Falls, on the Nipisiguit river, 9,000 horse-power; The St. George Pulp and Paper Co. on the Magaguadavic, 2,700 horse-power and the Avon River Power Co. near Windsor, of 2,300 horse-power.

The Canadian tobacco crop for 1924 is estimated at 18,710,740 pounds with a farm value of \$4,358,898. The area under crop was 21,317 acres, situated in the provinces of Ontario and Quebec.



Two lake trout taken in Reindeer lake in northern Saskatchewan. The size of these fish gives an idea of the value of the fisheries in the inland waters of Canada.
—Photo by Topographical Survey.

CURRENT REPORTS

The latest report of the International Boundary Commission covers the re-establishment of the boundary between Canada and the United States from the source of the St. Croix river to the St. Lawrence river. The report, which is signed by E. Lester Jones, the United States Boundary Commissioner, and the late J. J. McArthur, His Britannic Majesty's Commissioner, contains a description of the boundary certified to by the Commissioners and a complete summary of the work done in connection with the re-establishment of the line.

The text gives in full the Treaty of April 11, 1908, under which this portion of the boundary was re-established, the appointments of the Commissioners, proclamations and Orders in Council reserving for public purposes a strip of land on each side of the boundary and the agreement of the Commissioners as to the manner in which the provisions of the treaty should be carried out.

A general description of field operations is given together with a narrative of the work performed each year. Field and office methods are described in some detail and the results of the computations are given in tabular form. There are special sections on topography, levelling, field transportation, map production, horizontal control, with particular reference to traverse methods and adjustments and on boundary monuments. The official description and definition of the boundary certified to by the Commissioners is in the form of tables of geographic positions of the monuments along the land boundary and "turning points" along the water boundary, and the length and azimuth of the lines adjoining these are shown.

The appendices contain an historical sketch of this section of the boundary, the text of all negotiations, treaties and reports dealing with it previous to the Treaty of 1908, a narrative of the original survey and demarcation under the Treaty of 1842, descriptions and elevations of bench marks established, and positions and descriptions of triangulation and traverse stations. The report which is well illustrated, contains four maps and is printed in large type on good paper, and is accompanied by a separate portfolio of triangulation and precise traverse sketches.

DEPOSITS OF MARL IN NEARLY EVERY PROVINCE

Canada Well Supplied With This Important
Source of Lime For Land Treatment

Deposits of marl, according to Dr. F. T. Shutt, Dominion Chemist, who during 1923-24 was called upon to analyse some forty samples received from Ontario, Quebec, New Brunswick, Nova Scotia, Alberta, and British Columbia, are found in nearly all the provinces of Canada and are important and valuable sources of lime for land treatment. They occur in beds from a few inches to several feet thick on cold lake bottoms and are often overlaid by peat or muck. Some marls are almost pure carbonate of lime, while others contain more or less clay, sand, organic matter, etc., which decrease their value for agricultural purposes. Marls as found, are usually soft and pasty in consistency, frequently showing small shells. On air-drying by simple exposure they are found to be readily friable, breaking down to a coarse powder that easily permits of uniform distribution on the land. "Indurated" marl is a hard rock-like material with a honey-combed structure. It occurs by deposition from the waters of streams and springs that are rich in carbonate of lime. Large deposits are to be found in the valleys of British Columbia. Marl, which can, not infrequently, be had for the cost of digging and hauling, may be used on both heavy clay and light sandy loams and is especially valuable for the former. As a supplier of lime it corrects acidity or sourness, furnishes an element for plant nutrition and promotes nitrification, hence assisting in rendering available the soils' store of inert nitrogen; it is particularly valuable as an amendment for sour soils.

WILD LIFE CONVENTION TAKES FORWARD STEP

(Continued from page 1)

order that these birds may be assured of a resting place and a food supply.

Practically speaking there has never been any difference of opinion in the United States as to the necessity of these bird refuges but there has been a very great difference of opinion as to the best way to proceed to secure their establishment. As a result of the two Denver conferences common ground was found, on which all the organizations and individuals concerned could get together. A committee of five, representing the principal wild life conservation organizations of the United States, has been appointed to draft legislation based on this common ground. As a result all the wild life conservationists in the United States will now present a united front in this matter of game bird refuges.

Needless to say, this question of refuges in the Southern States is of the greatest interest to all Canadian conservationists, because, if the millions of birds bred in Canada are unable to obtain sufficient food in the Southern States to sustain their lives, it would not be long before there would be very little migratory bird life on the continent.

The experimental planting of rainbow trout fry made by the Department of Marine and Fisheries in Loch Lomond, near St. John, New Brunswick, four years ago, is showing satisfactory returns. The progeny from the introduced stock was observed in considerable numbers during the current season in several streams that flow into the lake.

SUCCESS IN ARTIFICIAL HATCHING OF STURGEON

Experiment Carried Out in Northern Manitoba by Canadian Fish Culture Service

Few experiments in fish hatching in Canada have attracted the attention being given to the successful attempt made by officers of the Fish Culture Service of the Department of Marine and Fisheries to propagate sturgeon artificially. The experiment was carried out last year on the Pigeon river, a tributary of lake Winnipeg in Manitoba, by the Superintendent of Gull Harbour hatchery at Winnipeg, and of the eggs secured 65 per cent of them were hatched and the fry liberated in the best of condition.

The rapid decrease and depletion of the sturgeon fisheries of North America during the last forty-five years can fairly be compared with the disappearance of the buffalo from the western plains. Many attempts have been made in other countries to propagate sturgeon artificially in commercial quantities but with indifferent success, the chief difficulty being to secure ripe males and females at the same time. The first effort made to propagate sturgeon by the Fish Cultural Service in Canada was that conducted in 1924 and the results have been most gratifying.

A visit to Playgreen lake at the north end of lake Winnipeg, one of the principal sturgeon areas in Manitoba, was made in 1923 by the superintendent of the Gull Harbour hatchery. This trip was made during the commercial fishing season when approximately four hundred sturgeon were taken in this area in the month of June. Of these eighteen were females ready for spawning. The fishermen were Indians and very few of them could understand English. The result of this state of affairs was that, although the taking and the fertilizing of ripe eggs were explained to them through an interpreter, the eggs they saved from one female fish went unfertilized and were lost.

In the early spring of 1924 a party set out from the Gull Harbour hatchery for the Pigeon river in an effort to secure eggs from the sturgeon known to ascend that river presumably for spawning purposes. Considerable difficulty was experienced in getting the equipment on the ground, setting nets, and improvising a hatchery. On June 12 a ripe male and a ripe female were taken together, and it was from these that the eggs hatched were taken. Both fish were returned to the river after they had been stripped. Many obstacles had to be overcome before the hatching was finally accomplished and the 8,000 fry which resulted from the experiment were released in the river.

These operations apparently marked the first and only occasion on which sturgeon eggs were successfully fertilized and hatched under the supervision of an officer of the Department of Marine and Fisheries and, with the exception of the work done by the Biological Board of Canada, apparently the first time that such work has been successfully accomplished in Canada.

LIME PRODUCTION DURING 1924

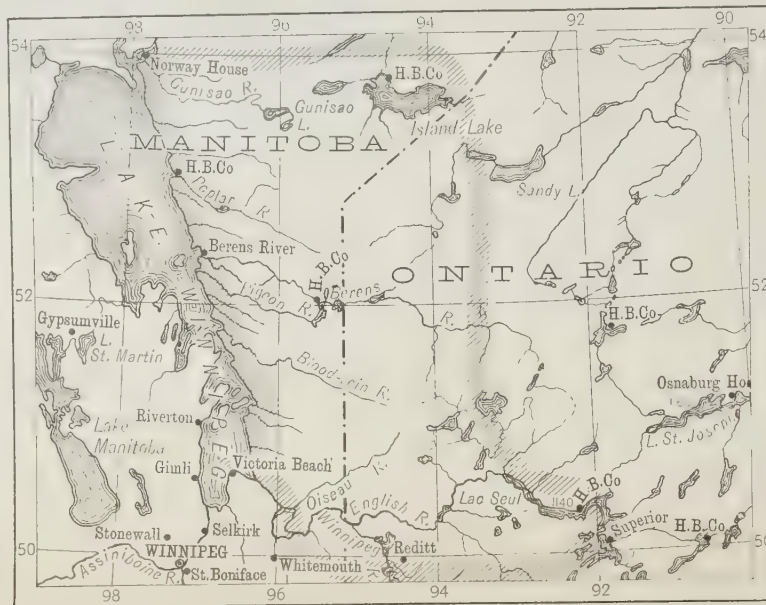
The production of lime in Canada during 1924, according to the Dominion Bureau of Statistics, totalled 9,137,009 bushels, consisting of 7,820,209 bushels of quicklime and 1,316,800 bushels of hydrated lime, with a total valuation of \$3,178,541. In 1923, the production was 10,035,319 bushels valued at \$3,266,608.

MAPPING OUR LITTLE-KNOWN AREAS

Modern Methods Used in the Survey of Regions East of Lake Winnipeg

Included within the borders of the Dominion are thousands of square miles of territory, unmapped and unknown, yet holding possibilities for future development hardly dreamed of by the average man of to-day. Indeed, as to the actual limit of those possibilities, it is difficult even to speculate with any

undertaking. But by the use of aerial photography in surveying, in connection with ground control, a rapid and economical means has been evolved of producing detailed maps of the district of sufficient accuracy for the purpose in view. Maps, which will be available to the public in a few months, will be of



Mapping Our Little-Known Areas—During the past season over 10,000 square miles of territory in the vicinity of the Manitoba-Ontario boundary were mapped by aerial photography. Portion of map enclosed by hatching is approximately the area covered.

assurance of certainty, when it is realized what other parts of Canada, once held of little value, have brought forth.

One of these regions of which little is known, lies easterly from lake Winnipeg and extends beyond the Manitoba boundary line into the north-western part of the province of Ontario. There are a few trading posts scattered along the principal waterways but in the interior there is a large area devoid of any touch of civilization. As a consequence, the information at present available is very meagre regarding the resources of timber, of mineral wealth, or of water-power possibilities.

This area lies within the great Canadian Shield, the same rock formation that extends across the richly mineralized districts of northern Ontario and Quebec, and that has had its share in making Canada one of the greatest mineral producing countries of the world.

As an aid in the development of this little-known area, the need of dependable maps has been apparent for some time. Hitherto the maps, based largely upon explorers' sketches and Indian report, have given only a rough indication of the location of the principal rivers, streams, and lakes, and the positions of the few trading posts. There were many blank spaces, devoid of all information, which too frequently gave rise to the erroneous assumption that there was nothing of interest there.

During the past season over ten thousand square miles of this region have been covered by the aerial surveying method by the Topographical Survey, Department of the Interior, working in conjunction with the Royal Canadian Air Force. The mapping of the intricate system of waterways and water areas in this district by the regular ground method of survey would have been a very expensive and arduous

great value in the opening up and administration of this little-known part of Canada. They will form excellent base maps for forest and fire patrol or other forestry purposes, for geological, water-power and other investigations, for properly indicating routes of travel for the hunter, prospector, sportsman, and tourist, besides achieving the general result of adding to the sum total of the knowledge of our country.

CANADA PROMINENT AT ASTRONOMICAL UNION

(Continued from page 1)

periment to test the Einstein theory of relativity, which was carried through with the 100-inch telescope at the Mt. Wilson Observatory in California. One of the predictions of Einstein, that of the change in wave-length of light emitted from a star of great density, was definitely verified in the case of the close companion of the star Sirius, which on account of peculiar conditions was particularly well suited for the test. This forms the most definite proof yet adduced for the Einstein theory. Incidentally the star was shown to have a density some four thousand times greater than that of iron.

It was decided that in the fall of 1926 a number of nations would co-operate to observe a girdle of longitude stations encircling the earth, in order, among other things, to provide data for an ultimate decision on Wegener's hypothesis of an extremely slow but progressive drift of the continents relative to one another. In this undertaking it is expected that the Dominion Observatory will take part; the connection of the various stations will be effected by the use of wireless telegraphy.

In the discussions on spectral classifi-

WIRELESS A GREAT AID IN SURVEY WORK

Engineers of the Geodetic Survey of Canada Determine Longitude With Its Assistance

Wireless has proved a great aid in the triangulation survey of the Dominion being carried on by the Geodetic Survey, Department of the Interior. The determination of the longitude of certain stations in the triangulation work is necessary and this is done by observing certain stars for time and by making clock comparisons of the local time of two points which are often widely separated. The observations and comparisons are usually made in conjunction with the Dominion Observatory at Ottawa, the longitude of which is accurately known, and it is in comparing the field clock with the observatory clock that the wireless is used.

The wireless has many advantages over the telegraph line in surveying work, not the least of which is its low cost. The payment of telegraph tolls is eliminated by the use of wireless, while both time and money are saved in other ways. The aerial for wireless work can be erected in a few minutes as compared with the time required to string up the wire to connect with the main telegraph line, sometimes over a distance of several miles. Wireless also makes possible the observation of stations far removed from telegraph lines.

During the present summer an engineer of the Geodetic Survey observed three stations using the wireless for the clock comparisons. One station was near Klock, Ontario, fourteen miles from the telegraph line; another near Linton, Quebec, four miles from a telegraph line and the third near Chambord, on lake St. John, Quebec, four miles from the telegraph line. At these stations the comparisons were made with an accuracy of about one hundredth part of a second of time, and were in each case completed in the five minutes interval occupied by the sending station.

cation of the stars, as well as in other committees on astrophysics, the Dominion Astrophysical Observatory, which has done intensive work along these lines, took an important part.

The question of the admission of former enemy nations into the Union aroused considerable discussion and somewhat divergent views found expression. No definite decision was arrived at, but it was the consensus of opinion that the time was at hand, if not already here, for steps in that direction.

The next meeting of the Union, on the invitation of the Dutch Government, is to be held in Lieden, Holland, in 1928.

The production of feldspar in Canada during 1924, according to the Dominion Bureau of Statistics, as shown by the sales of Canadian feldspar in 1924 advanced to a new high level of 44,804 tons valued at \$358,540. In 1923 shipments totalled 29,225 tons valued at \$237,601. In 1924 shipments comprised 16,147 tons from Quebec deposits and 28,657 tons from Ontario properties. Exports advanced 11,000 tons to a total of 37,869 tons, while the imports also showed an increase of 200 tons to a total of 1,921 tons.

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EXCEPTIONAL ICE CONDITIONS ENCOUNTERED ON ARCTIC PATROL



Arctic Expedition of 1925—C.G.S. Arctic at anchor in Fram Haven, Rice strait, Latitude 78° 46' north. The house for the use of the police subdetachment is in the cove at the left of the picture. To the right is seen the conical top of the famous landmark, Cocked Hat island, in the general direction of Bache peninsula.



Arctic Expedition of 1925—Native huts at Ponds Inlet. These huts are used both as summer and winter homes and form part of a considerable village about the police post. The health of the inhabitants of the village has been good during the past year. The women in the picture are engaged in preparing skins in native fashion.

C. G. S. "Arctic" Returns from 1925 Expedition After Eventful Cruise—Health Conditions Good

eastern side of the strait, which was free from ice.

The first port of call was Godhavn, Greenland, reached on 10th August. Under the Danish Government there is a local parliament for Greenland, consisting of nine leading native citizens who have been selected to represent the different parts of the country. This body was in session when the Arctic arrived. Mr. Mackenzie had some official business to transact with the Governor and when this was concluded he was entertained at dinner by that officer. Following this, Governor Rosendahl, the members of the legislature, and all the white residents of Godhavn were invited by Mr. Mackenzie to come on board the Arctic, where the moving pictures taken during the 1924 voyage were shown and refreshments served. On returning to their duties the members of parliament passed a resolution expressing their goodwill toward the Arctic expedition and their appreciation of the courtesy shown them.

On the 11th August the Arctic sailed north, still keeping up the east side of the strait, and reached Etah on the 19th. Here the two ships of the MacMillan expedition, the Bowdoin and Peary were at anchor. Civilities were exchanged, the officers of the two expeditions dining together, first on the Arctic and then on the Peary.

Leaving Etah about 1 a.m. on the 21st the Arctic continued northward on her journey to Bache peninsula, but was prevented from reaching that point by the ice in Buchanan bay. About forty tons of supplies and building materials were, therefore, landed at Fram Haven

on Rice strait near cape Sabine, from whence they can be taken on sledges to the site of the new post, about fifteen miles distant. Fram Haven is for the time being, an outpost of Craig Harbour, and it was there that a substantial frame building was erected in 1924 and goods stored. It was made use of as a supply depot by Corporal Michelson, in charge of Craig Harbour post, in his winter patrol in 1924-25 to the Kane Basin district.

Fram Haven which was the most northerly point touched during the voyage, 78° 46' north latitude, was reached about 10 a.m. of the 21st. On the 23rd after having discharged the supplies the Arctic turned her prow southward, and, as the ice had now shifted out into the middle of Davis strait, was able to reach all the posts and deliver the supplies required for another twelve months. The officers at the posts were greatly rejoiced by the arrival of the Arctic as owing to the late date they had given up hope of seeing her, and their supplies, especially of fuel, were running low. However, to meet the situation they had already placed themselves on short rations in order to carry on as well as possible for another winter. The fears of those at Ponds Inlet for the safety of the Arctic had been increased by the finding on the shore of a cap and oilskin coat which they thought had belonged to one of her officers.

The posts were visited in the following order: Craig Harbour, on Ellesmere island, August 25 to 27; Dundas Harbour, on Devon island, August 29 to September 1; Ponds Inlet, on

Baffin island immediately south of Bylot island, September 3 to 8; and Pangnirtung, on Cumberland sound, September 18 to 22. Leaving the last named post on September 23 the Arctic was turned toward Quebec. There was nothing unusual on the southward journey until nearing the island of Anticosti in the gulf of St. Lawrence when the ship ran into a heavy storm which she weathered successfully and reached King's Wharf, Quebec, at 4 a.m. on October 10.

Inspector Wilcox, who has already spent two winters in the North, one at Craig Harbour and the other at Pangnirtung, will make his headquarters for this winter at Ponds Inlet. To this point there was also returned the native Noo-kud-lah who for complicity in the murder of Robert Janes, a trader, had been imprisoned for two years in Stony Mountain penitentiary in Manitoba.

Dr. Livingstone examined the inhabitants at all the posts, performed several operations, and gave medical advice. His examinations of the natives confirmed the view formed on previous visits that tuberculosis is not a serious menace to the Eskimos of the Eastern Arctic, nor are they seemingly subject to such contagious diseases as typhoid, smallpox, or measles. The chief causes of death are apparently pneumonia and influenza.

Mr. J. D. Soper, naturalist, of the Victoria Museum, Ottawa, who went to Pangnirtung on the Arctic in 1924, decided to spend another twelve months in Baffin island, as he had not been able to make as much progress in his investigations as he desired. He, however, forwarded to the museum several large boxes of specimens which he had gathered relating to the flora and fauna of the region.

(Continued on page 2)

Although held in the ice in Davis strait for twenty days the C.G.S. Arctic, which left Quebec on the first of July, carried out her patrol duties, visited and supplied all the old police posts and landed materials for a new one, and returned to her home port without mishap on the 10th October. This year's expedition was in charge of Mr. George P. Mackenzie, with Captain J. E. Bernier as chief navigating officer. Dr. L. D. Livingstone was surgeon; Mr. L. J. Weeks of the Geological Survey, Department of Mines, geologist; Capt. Harwood Steele, secretary; Messrs. R. M. Foster and R. S. Finnie, wireless operators, and Mr. G. H. Valiquette, cinematographer. Inspector Wilcox of the Royal Canadian Mounted Police, who spent the winter of 1924-25 at headquarters in Ottawa, returned to the North on this voyage, accompanied by several constables sent out to relieve men who had been on Arctic duty for two or three years.

The Arctic was delayed for several days in leaving the St. Lawrence owing to minor accidents to parts of the machinery. No untoward incident took place on the northward voyage until the 18th of July, when in the endeavour to reach Cumberland gulf to land supplies at Pangnirtung, the ship became wedged in the ice which was massed against the coast of Baffin island. Every effort was made to reach Cumberland gulf as a number of Eskimo dogs and supplies of native boots and other materials had been collected there during the winter, which it was desired to take to Craig Harbour and other northern posts. After twenty days the ship was freed from the ice, and, as it was found to be impossible to reach the stations on the west shore of the strait at that time, the ship proceeded direct to Disco island, Greenland, and up the

CANADA OFFERS GOOD HUNTING

Every Province of Dominion Well Stocked With Game—Results of Conservation Policy

The advance of civilization, entailing the removal of the primitive forests and materially altering the country's surface under cultivation, has driven game animals, and particularly the larger species, from the southern part of the continent, and compelled those species which have survived destruction to seek refuge in the extensive forests, the mountain areas, and the wild places of Northern Canada, there to share these vast regions with the animals which during historic times have always inhabited them.

The physical characteristics of Canada, its innumerable lakes, extensive forests, and great open prairies, have combined with its natural geographical situation to constitute a distinct faunal region, particularly in the north. In this region are to be found animals characteristic of North America and in most cases non-existent in other parts of the world, such as, buffalo, moose, wapiti, caribou, musk-ox, mountain sheep, Rocky Mountain goat, antelope, besides others of less harmless disposition such as the grizzly, lynx, and wild cat.

To the wisdom of the Governments, both Federal and Provincial, this generation is indebted for the existence in Canada of large tracts or reserves where, under absolute protection, game animals live and multiply. Thus it comes that there are provided for game not only vast tracts of virgin territory beyond the reach of civilization but also numerous reserves in many parts of the country adjacent to settlement. In these reserves game multiplies rapidly under protection and the surplus overflows into the surrounding country replenishing the supply. Owing to these conditions and to protective legislation, each of the provinces is able to offer to the hunter exceptional opportunities for sport and at the same time safeguard the future supply.

In the provinces of Nova Scotia and New Brunswick there is presented to the hunter a choice of territory which is easily accessible. This ranges from the more readily accessible districts where daily hunting trips may be undertaken from some convenient town or village to points where ducks, geese, and other game birds and small game may be had, to the more remote districts which are usually reached by wagon road, trail or canoe routes, and where bear, moose, deer, wildcat, wolf, ducks, geese, partridge, pheasant, plover, prairie chicken, quail, snipe and woodcock may be had in season.

The provinces of Quebec and Ontario include within their boundaries some of the finest hunting territory in America. While in some districts in Quebec the hunting rights on certain tracts of land are leased to organized hunting clubs, there is still much public land where excellent hunting may be had and where such game as moose, deer, caribou, bear, wolf, rabbit, ducks, geese, partridge, pheasant, plover, quail, and woodcock may be had in abundance. In Ontario there is such a large number of excellent hunting districts which are readily accessible, that the hunter in making a choice need only be governed by the distance he wishes to travel and the kinds of game he prefers to hunt. Good hunting for game birds, small game and deer may be had close to the settled districts in southern Ontario. The real big game districts have, however,

been fixed by sportsmen as the vast territory lying north and west of the French river.

While Eastern Canada, owing to its geographical position and proximity to the more populous sections of North America receives annually the larger number of non-resident hunters, the Prairie Provinces of Manitoba, Saskatchewan, and Alberta likewise are visited by considerable numbers of sportsmen. In the more open sections of these three provinces the hunter who fancies game bird shooting will find geese and ducks in great numbers and there is also an abundance of prairie chicken, partridge, rail, coot, and plover. In the more wooded and northern sections there is an abundance of large game such as moose, deer, caribou, bear and wolf. The buffalo, elk, and antelope are protected.

The province of British Columbia and the western portion of the province of Alberta, which includes that part of Canada lying between the eastern foothills of the Rocky mountains and the Pacific ocean, presents a striking contrast to the other sections of the Dominion both in kinds of game animals available and the methods of hunting. Species of game such as mountain sheep, mountain goat, cougar or mountain lion, and grizzly bear are found in this section of Canada. Other game found in this territory includes moose, caribou, deer, and bear. The game birds include grouse, Hungarian partridge, prairie chicken, pheasant and several varieties of geese and ducks as well as numerous other game birds of lesser importance. The method of hunting in this territory differs somewhat from that in other sections of Canada in that travel inland from the railway is usually by pack train and the time spent on the trip is therefore considerably longer.

Canada welcomes the tourist and sportsman who appreciates her game privileges and endorses her national policy for the conservation of wild life. The Department of the Interior has compiled a large amount of data on hunting conditions in Canada which is being continually augmented by new information, and is therefore in a position to supply sportsmen with large scale maps, advice on the accessibility of any section, and general information regarding game in any particular region of Canada.

The Department of Marine and Fisheries has marked a considerable number of Atlantic salmon, by attaching silver tags to their dorsal fins, for the purpose of tracing the movements of these fish. A salmon that was marked and liberated off Burns point, Port Maitland, Yarmouth county, Nova Scotia, on June 11 of this year was killed in the Moisie river, Quebec, in the early part of July. If this fish took the most direct route it travelled about 800 miles, but if it followed the larger indentations of the shoreline it travelled over 1,200 miles.

The production of quartz in Canada during 1924 totalled 150,896 tons valued at \$323,156, as compared with 264,076 tons valued at \$599,250 in the previous year, according to the Dominion Bureau of Statistics.



Arctic Expedition of 1925—Landing supplies from the Arctic at Craig Harbour. At this place the Arctic has to anchor about a mile off shore and the difficulties of navigating small boats through the ice floes are indicated in the picture.

EXCEPTIONAL ICE CONDITIONS ENCOUNTERED ON ARCTIC PATROL

(Continued from page 1)

Many valuable pictures, both still and moving, of animals and also illustrating the lives of the Eskimos were secured.

A close watch was maintained for evidences of the Norwegian sloop *Lief Eriksson*, in which Mr. William Nutting, of New York, with three companions set out on the 8th September, 1924, from Julianehaab, Greenland, on the last leg of a cruise from Norway to Battle Harbour, Labrador. However, no traces of any kind were discovered.

The health of all the white men at the posts was found to be excellent and all on board the *Arctic* had a clean bill of health so far as disease was concerned. Captain Bernier, however, had the misfortune to be struck by a boom, which broke loose in a squall, and was crushed against the railing of the bridge, but under the care of Dr. Livingstone was able to continue his duties and had almost completely recovered upon reaching Quebec. Chief Engineer Theriault had a narrow escape from most serious injury through the bursting of a water-gauge, a piece of glass lodging in his neck close to the jugular vein. Though he suffered from the loss of considerable blood he was able to resume his duties at the end of a week.

In spite of the detention in the ice-field and minor accidents which delayed progress at somewhat critical junctures the trip, on the whole, was eminently successful and the work of changing the personnel and supplying the posts of the Canadian archipelago was satisfactorily effected thus placing the officers in a position to carry on their varied activities for another twelve months.

FISHING IN PRAIRIE WATERS

Value of Commercial Output Shows Increases in Manitoba and Saskatchewan

Increases in the value of the products of the commercial fisheries of two of the three Prairie Provinces of Canada were recorded during 1924 according to the Dominion Bureau of Statistics, the grand total reaching \$2,054,162, apportioned as follows: Manitoba, \$1,232,563; Saskatchewan, \$482,492; and Alberta, \$339,107. Compared with the preceding year the value of Manitoba's fishery product increased by \$211,968, and Saskatchewan's by \$195,849. Alberta showed a decrease of \$99,630.

Whitefish and pickerel were among the principal kinds of fish taken in prairie waters, the former representing 42 per cent of the total value and the latter, 28 per cent.



Arctic Expedition of 1925—Map showing a portion of Canada's Arctic archipelago with points visited by C.G.S. *Arctic* during this year's patrol.

The official records of all surveys of Dominion lands are kept in the Topographical Survey, Department of the Interior. These comprise the returns of survey of base lines and meridians, townships, settlements, roads, railways, townships, mineral claims, timber berths, interprovincial boundaries, etc. In August, 1925, these records comprised 19,333 books of field notes and 33,913 official plans. Copies of these are prepared or information from them furnished as required.

In 1924 the 11 automobile factories in Canada produced 98,245 passenger cars, 18,043 trucks and 16,172 chassis, a total of 132,460 cars with an aggregate selling value of \$88,240,418; this was a decrease of 10 per cent from the 1923 production of 147,202 cars valued at \$96,614,176, according to a statement issued by the Dominion Bureau of Statistics. Raw materials costing 64 millions were used.

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BENEFICIAL RESULTS SURVEYS CO-OPERATION

Important Geodetic Net Completed by United States and Canadian Services

The summer of 1925 saw the completion of a most extensive scheme of geodetic co-operation between Canada and the United States, and one which will have a profound and accumulative effect on geographical knowledge in Canada. With the closing of field work this season there was completed a net of triangulation along the International Boundary from lake Superior to the Pacific coast, forming one of the most important and extensive pieces of co-operative geodetic surveying of which there is record. The western part of this net, which extends from the Lake of the Woods to the Pacific, and which is about 1,250 miles in length, will form the basis for all future triangulation in Canada west of the Great Lakes. The field work covered five seasons, and was divided equally between the Geodetic Surveys of the two countries.

Had the arrangement for co-operation in this work not been made, it would have necessitated the two national geodetic survey organizations extending similar nets of triangulation a short distance apart, the one to the north and the other to the south of the International Boundary. The economy secured by co-operation is therefore self-evident.

Similar co-operative geodetic work is proceeding in several areas in the two countries, such as along the Pacific coast where the Geodetic Survey of Canada and the United States Coast and Geodetic Survey are working on a co-ordinated scheme of triangulation through northern United States, British Columbia, southeastern Alaska, Yukon and the main part of Alaska. The first three links of the above scheme have been completed.

A further instance of practical co-operation is shown by the fact that it was possible to make special arrangements to have time signals from the United States wireless station at Annapolis, Maryland, broadcast at 3 a.m. in addition to the usual 10 o'clock time signals. This was in order to accommodate the engineers of the Geodetic Survey engaged in interprovincial boundary work in Sheep Creek pass, Alberta. The three hours difference in time between Annapolis and this western

CANADA IS TIMBER STOREHOUSE

Great Britain Looks to Dominion for Empire Supply — Afforestation Work in Old Country

The rapidity with which European countries are realizing that Canada's forest resources are destined to play an increasing part in supplying world needs, and the growing attention being focused on our timber supplies, marketing facilities, methods of conservation, and appalling fire losses were brought out at recent forestry conferences held in France and Great Britain. The mother country, particularly, looks to Canada as the great storehouse of Empire timber. The British Association for the Advancement of Science, one of the largest and most authoritative organizations of scientists in the world, stressed forestry problems at its 1925 meeting at Southampton, England. The special forestry section, which was founded at last year's meeting of the Association in Toronto, Canada, was particularly active and showed promise of developing, in the near future, into one of the strongest constituents of the Association. The Department of the Interior, Canada, was represented at the meetings of this section by Mr. D. Roy Cameron, Assistant Director of Forestry, who during the past season spent some weeks in Europe making a study of forest conditions and methods of conservation.

One of the most noteworthy papers presented before the forestry section of the British Association was given by Lord Lovat, Chairman of the British Forestry Commission, describing the progress in post-war forestry development in the British Isles, and the Commission's plans for the future. The Commission is conducting a very extensive afforestation program and beginning this fall 39,000,000 trees will be planted in Great Britain. By the spring these trees will occupy 22,000 acres of what would otherwise be chiefly waste land. Since it began its work five years ago the Commission has planted 52,500 acres and assisted local authorities and private owners to plant another 50,000 acres, resulting in 184,000,000 new trees in England, Wales, and Scotland. The program spread over ten years provides for the planting of 250,000 acres with 450,000,000 trees.

While accompanying Lord Lovat, Chairman of the Commission, on a tour of inspection, Mr. Cameron saw thousands of acres of plantations covered with Douglas fir and Sitka spruce grown from Canadian seed collected for the British Government by the Forest Service of the Department of the Interior.

As interesting perhaps as the plantations themselves is the development of the "forest holdings" policy of the British Forestry Commission. The intimate correlation of forestry and agriculture is recognized in Great Britain, and in the extensive afforestation projects an opportunity is seen for establishing permanent rural communities dependent on both forestry and agriculture for their livelihood. Accordingly,

point brought the time signals in at Sheep Creek at about midnight, thus enabling the engineer to observe a full set of stars before and after his clock comparison, and his results were highly satisfactory every night during the occupation of this station. Other stations have been equally accommodated and co-operation in each case has enabled engineers to accomplish results that otherwise would have been impossible.

The Forestry Commissioners acquire agricultural lands adjoining the plantations and lease them on easy terms. The lessees are guaranteed not less than 150 days work per annum from the Commission and have the remainder of the year to attend to their agricultural pursuits. In this way, not only is the farmer sure of a steady cash income to supplement the production of his farm, but the Commission also secures a reliable and interested labour supply.

The number of holdings is of course determined by the labour requirements of the plantation project. The rate of afforestation is so adjusted that planting will continue year by year until such time as the earliest plantations will produce marketable thinnings. The work required to thin these areas will occupy the time of the men no longer needed for planting. Thinning operations are in turn adjusted to last until the timber on older areas reaches maturity and the final crop can be harvested. Following harvesting each area will again be planted.

This forest holdings policy is considered by authorities to be one of the soundest and most feasible "back-to-the-land" movements yet advanced in the British Isles. The supplementing of farm work with forestry labour, paid in cash, enables the holder to bring under agriculture, lands formerly too poor to support a family under existing economic conditions in Great Britain. The basis of the whole is the treatment of the forest as a crop to be handled in perpetuity, rather than as a mine to be exploited and abandoned.

NEW VARIETIES OF GRAINS

Gratifying Progress Toward Producing Rust-Resisting Wheats

The production and development of superior varieties and strains of grains by the Dominion Experimental Farms, Department of Agriculture, is accomplished chiefly by artificial crossing, although the possibilities of finding a starting point for something better than now exists in old established varieties is not overlooked.

Owing to the transcending importance of hard spring wheat in Canadian agriculture and to the vital necessity of maintaining our reputation as a producer of high quality wheat, this crop has received the greatest attention. While the introduction of such varieties as Marquis marked an enormous advance, yet there is need for still better varieties. Varieties which mature earlier and which will escape or resist rust, that arch enemy of the Manitoba wheat grower particularly, are badly needed. The Department is therefore devoting every effort to produce sorts which will meet the existing requirements, and it is gratifying to be able to say that very considerable progress has been made in this direction. In addition to at least two new wheats which may appear in the near future, pending final trial, the Division is subjecting to special tests two promising varieties of barley, two of peas, two of oats, and three of flax.

Practically all the cross-breeding work is done at Ottawa, whereas the final adjudication of the new creations or selections is left very largely with the branch farms and local co-operators.

PARKS WILD ANIMALS LOSING FEAR OF MAN

Are Seen in Towns, and on Golf Courses and Highways in Canadian National Parks

Each succeeding year's round of tourists bring new expressions of wonderment and surprise at the rapidity with which the wild animals in the Canadian National parks are losing their fear of man. Parks' officials, who administer wild life protective measures, have watched this condition develop and to them it was to be expected, but to the tourist new to the parks the holding up of one's car on a park highway by a band of friendly Rocky Mountain sheep is a novel experience.

Visitors to Rocky Mountains park in Alberta are always sure to have close-up views of mountain sheep and other wild animals at different points on the highways, and bears are frequent visitors to the outskirts of most of the towns in the parks. In the past year or two elk, among the most wary of animals, have been reported to have made their appearance on the golf links at Banff while play was in progress. In the early part of October of this year about fifteen elk trotted out on the fairway of the 13th hole, on their way from the Bow river to the upland forests. These exhibitions of animal friendliness are not confined to Rocky Mountains park. In Jasper park, on the occasion of Sir Douglas Haig's visit in July of this year, two young black bears interrupted the Field Marshal's game by their appearance on the links.

The growth in numbers of wild animals in the parks and the ease with which they may be encountered and photographed is year by year becoming a greater attraction to tourists.

THE BEET SUGAR INDUSTRY IN CANADA

The production of sugar beets grown for beet sugar in Canada in 1924 according to the Dominion Bureau of Statistics was 295,177 tons from 31,111 acres, an average yield per acre of 9.50 tons, as compared with 159,200 tons from 17,941 acres, or an average per acre of 8.87 tons in 1923. The total value of the roots grown in 1924 was \$1,704,791, as compared with \$1,922,668 in 1923. The total production of refined beetroot sugar in 1924 was 85,770,709 pounds, of the value of \$6,192,645. In 1923 the corresponding figures were 39,423,160 pounds, of the value of \$3,745,200. During 1924 two Canadian sugar beetroot factories were in operation. A third factory has been established at Raymond, Alberta, and will operate for the season 1925-26. The company reports that the acreage planted to sugar beets for this season was well over 6,000 acres and the total production is estimated at 58,000 tons, an average yield per harvested acre of 9.76 tons.

The year 1924 has been the most encouraging for Canadian flax growers since 1920. The growing and retting conditions in western Ontario, where practically all the Canadian fibre flax is at present produced, were very favourable, with the result that an exceptionally high yield of fibre and seed has been obtained. Some commercial areas have produced as high as 339 pounds of fibre and 16 bushels of mill-run seed per acre.

TWO NEW WIRELESS STATIONS ARE OPENED

Aklavik and Fort Smith Complete System in Northwest Territories and Yukon

The opening of the wireless station at Aklavik, in the delta of the Mackenzie river, on October 7 was announced by the North West Territories and Yukon Branch of the Department of the Interior. The opening of this station, which is the most northerly in Canada, together with that at Fort Smith which began operations on September 5, marks the completion of the system designed to bring the Mackenzie valley, the Yukon, and the Western Arctic coast into daily touch with civilization. The order of the stations from north to south is Aklavik, Dawson, Mayo, Simpson, Fort Smith, and Edmonton.

The Eskimo town of Aklavik is about fifty miles from the Arctic ocean and 150 miles from Herschel island. In the past it has taken many months to receive a reply to a letter written to far northern points whereas since the opening of the Aklavik station return messages have been received in Ottawa within a few hours. The extension of the system to include the stations of Aklavik and Fort Smith will be a great convenience to the people of the country and of immense assistance in administration and development. It is the intention to establish a substation at Herschel island to operate during the period of open navigation. Herschel is a port of entry for ships coming by way of Bering strait and Alaska, and wireless communication will be of great assistance to the officials in the collection of customs duties and in other administrative work.

SIXTEEN HISTORIC SITES MARKED DURING SUMMER

Canadian National Parks Branch Erected Cairns and Affixed Bronze Tablets

The Canadian National Parks Branch during the summer of 1925 carried on its work of preserving the historic sites of national importance throughout Canada. Sixteen sites have been marked, usually by the building of a stone cairn and the placing of a bronze tablet. Tablets were unveiled at Chambly cemetery, Fort Richelieu and Fort Longueuil, Quebec, and one on McGill University grounds, Montreal, the site of old Hochelaga. Other unveilings took place with appropriate ceremonies at Fort Nottawasaga, Ontario, Fort Calgary, Alberta, and at Battleford and Batoche, Saskatchewan. In British Columbia the turning of the first sod in the construction of the old Cariboo wagon road, made historic during the days of the Gold Rush, and the wreck of "The Beaver," the historic pioneer vessel of the British Columbia coast, were suitably commemorated, the former at Yale and the latter at Prospect Point, Vancouver.

Crude petroleum production in Canada during 1924, as reported by the Dominion Bureau of Statistics, amounted to 160,773 barrels valued at \$467,400, while during the preceding twelve months 170,169 barrels valued at \$522,018 were produced. Drilling activity, continued in the Coutts-Sweetgrass and Wainwright fields of Alberta. In Ontario, the production from the Romney well of approximately 3,000 barrels, encouraged the drilling of several more wells to penetrate the Trenton formation.



Waterfront of Aklavik in the delta of the Mackenzie river. The mast seen at the right belongs to the Northwest Territories and Yukon wireless station at this point. The lumber and merchandise on the bank has just been unloaded from steamers and barges from points higher up the river.

SCOTTISH NAMES IN PRINCE EDWARD ISLAND

Origin of These Place-Names Outlined in Recent Geographic Board Report

At the time of the last census in 1921, Prince Edward Island had out of a population of 88,615, 33,437 inhabitants of Scottish origin. The large proportion of people of Scottish descent, which is not approached by any other Canadian province, is indicated in the place-names which are the subject of a pamphlet of 55 pages just published by the Geographic Board of Canada.

Some of these place-names date back to 1772 when Captain John Macdonald, laird of Glenaladale and Glenfinnan, brought out over 200 emigrants. The names associated with the various branches of the Macdonalds include, in addition to Glenaladale and Glenfinnan, Keppoch, Kinloch, Kingsburgh, and Tarantum.

Port Selkirk commemorates the fifth Lord Selkirk, who personally came out in 1803 and settled on the island 800 emigrants who would otherwise have gone to the United States. This was eight years before he began the settlement of what is now Manitoba. Many of the early settlers in the island came from the island of Skye, which is borne out by the place-names, Armadale, Glasbhein, Kilmuir, Lyndale, Portree, Stanchel, and Uig. An interesting Gaelic name is Corranban applied to a settlement on Tracadie bay. The name means "white sickle" and refers to the appearance of the froth-covered shore line in the fall of the year.

The first British survey of the island was made in 1765 by Captain Samuel Holland, an army officer, who had fought at the sieges of Louisburg and Quebec. He named a large number of features after fellow officers including Murray river after the Scottish General James Murray, governor of Quebec, 1764-66. Of other Scottish names, New Glasgow commemorates Glasgow, Scotland, from which settlers were brought in 1819 by Wm. Epps Cormack, the Newfoundland explorer. While there is no Edinburgh or Aberdeen on the island, there is Dundee, the naming of which commemorates the romance of a lone Scottish lassie who came out to Charlottetown from Dundee, Scotland, in 1842.

The island place-names derived from other sources are also dealt with in the pamphlet.

STEADY DEVELOPMENT IN MINING INDUSTRY

Dr. Charles Camsell, Deputy Minister of Mines, Reviews Progress in Canada

The Deputy Minister of Mines, Dr. Charles Camsell, has recently visited northern and western Canada for the purpose of maintaining contact of the federal department with the provincial bodies concerned in the development of mineral resources, and of keeping in touch with the progress of mining in the different parts of the Dominion.

Referring to northwestern Quebec, the Deputy Minister reports that while some disappointment was felt in this region in the early part of the summer over the delay in the selection of a railway route into the new mining camps, the difficulty has now been overcome, and with the discovery of some new gold, copper and zinc deposits there has been a renewal of activity and restoration of confidence in the early development of this field.

The mining industry in Ontario is on a solid foundation and while the growth in the north in the past twenty years has been nothing short of remarkable there is good evidence to indicate that this advance will continue for many years to come. As the earlier locations become exhausted, fresh discoveries are made in the same or adjoining fields with the result that there is a gradually increasing production as time goes on. In this province as well as in the old mining provinces of Nova Scotia and British Columbia there has been a decided tendency towards the re-examination of certain fields and properties that have either lain dormant for a number of years or have been considered exhausted. This tendency has been due partly to the increased demand for lead, zinc and other metals. There is, moreover, a belief among experienced mining men that with the increased knowledge obtained in recent years regarding the nature and occurrence of ore deposits and of improved metallurgical methods, particularly with respect to gold ores, certain deposits considered unprofitable twenty-five years ago might now be worked at a profit.

Manitoba is proceeding steadily with the development of her mineral-bearing territory, and in the region east of lake Winnipeg new discoveries are extending beyond the provincial boundary into the province of Ontario. A healthier and more confident attitude is evident in British Columbia than has prevailed for some years and here as in Ontario there has been a movement into new territory as well as a reappraisal of

EXTENT OF RESOURCES SURPRISES DELEGATES

About 8,000 Publications Dealing with Canada Supplied to Interparliamentary Visitors

The Interparliamentary Union, which held its twenty-third annual convention this year in Washington and Ottawa, was convened in the capital of Canada October 13 and 14. The meetings were held in the House of Commons chamber, and, in order to give the delegates, 358 in number, an idea of Canada's natural resources, series of exhibits were arranged in the spacious Railway Committee room. These included displays by the Canadian National Parks, Natural Resources Intelligence, Topographical Survey, and North West Territories and Yukon branches of the Department of the Interior; the Department of Immigration and Colonization; and the Canadian National and Canadian Pacific railways. The Post Office Department provided a model working post office. To make the exhibit of greater value to the delegates it was supplemented by an information bureau furnished with publications in English and French on over forty main subjects. These embraced not only the work of the departments mentioned above but also that of the departments of Agriculture, Mines, and Trade and Commerce, and, in fact, the delegates requested documents dealing with every phase of legislation and administration. This information bureau was in charge of the Head Translator of the Department of the Interior, with a staff of six translators to meet the needs of the visitors. The members of the convention availed themselves fully of this opportunity, and selected about 8,000 publications, 5,000 of which they took with them the remainder being forwarded by mail to their homes.

Many of the delegates expressed surprise at the character and extent of Canada's resources and the opportunities for settlement.

properties that have been dormant for some years.

One of the interesting features of mining development in Canada is the new outlook for oil production in Alberta as a result of developments in Turner Valley in the foot-hills region. Up to last year the energies of oil mining companies had been devoted almost entirely to the search for oil in strata near the base of the Cretaceous formations. The finding of a heavy flow of wet gas far below this horizon in carboniferous strata last year has presented new possibilities and given a fresh impetus to oil prospecting. Attention is consequently being directed to deeper-drilling in the foot-hills belt where structures are more pronounced and more easily detected than in the plains.

The particular well responsible for the optimism which prevails struck a heavy flow of gas last year at 3,740 feet. The gas is under such pressure that as a result of expansion it reaches the collar of the well at a temperature of 22° F. below zero. The well was out of control for a short time but for some months past a daily recovery of about 500 barrels of gasoline has been made from the gas.

Registrations of passenger automobiles in Canada numbered 573,975, of trucks 55,572, and of other motor vehicles 22,574 giving a total of 652,121 registrations in 1924 as compared with 586,850 in 1923.



